

AUTOMOTIVE INDUSTRIES

Volume 60 Number 8

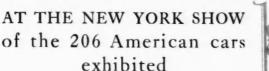
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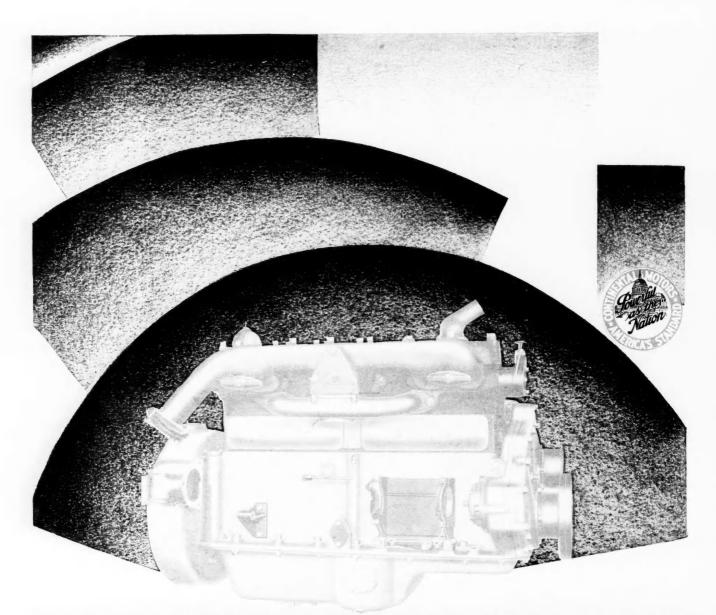
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Vol. 60

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No. 8

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VOLUME 60

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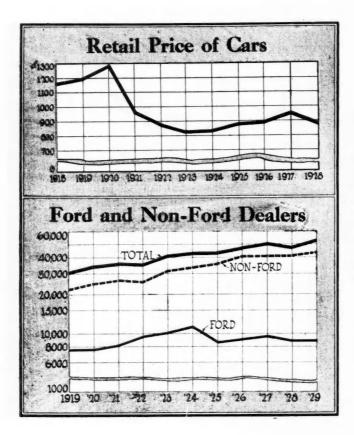
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Philadelphia, Saturday, February 23, 1929

NUMBER 8



On the Highway



Many Records Broken in That 1929 Will See

ITH a record-breaking year just closed, there is every prospect that the present year will carry still higher production, sales and profits for parts, accessories and equipment as well as for passenger car and truck manufacturers. The only apparent rift in the lute is the certainty of increased competition in all lines and in the low-priced car field particularly.

While retail prices of both cars and trucks have declined, the values built into them have been greatly increased because of engineering developments, better materials, etc., so that markets, both domestic and foreign, seem certain to be as great if not greater than they have been in any past year.



1 1 1 1 1 1 1 1 1 1	Data—1	120
	1927	1928
Number of air transport routes	22	67
Route miles in opera-	8,396	25,529
Number of miles flown	5,284,000	13,650,000
Aircraft production	1,995	4,500
Aircraft exports—value	\$1,903,583	\$3,452,000
Miles flown by air mail planes	3,241,000	7,251,000
Mail carried—pounds	1,421,000	3,448,000
Number of airports. Number proposed or	1,016	1,387
under construction		890
All Comme	ercial Aviation	1
Total miles flown	12,609,739	Not
Passengers carried	476,724	Avail-
Express carried—pounds	2,548,879	able.

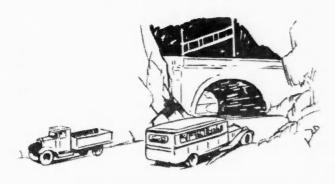
%	TIRE REPLACEMENTS \$882,000.000-10.1%
	ACCESSORIES \$532,000,000 ~ 6.1% SHOP EQUIPMENT \$78,700,000 ~ 0.9%
	REPAIR PARTS & SUPPLIES \$1,425,000,000-16.3%
	FUELS & LUBRICANTS \$2,600,000,000
	COMMERCIAL CARS \$ 334,000,000-3.8%
	PASSENGER CARS \$2,890,000,000 331%

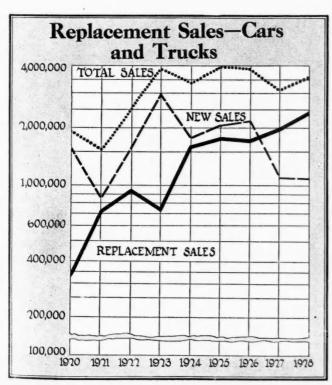
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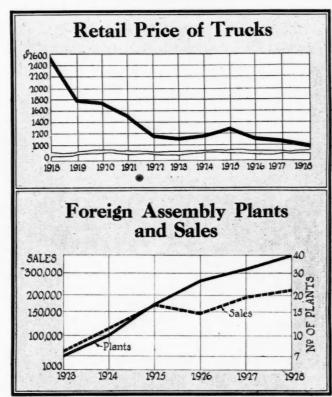
1928 but Prospects Are Still Further Gains

Dealers are increasing in numbers and in business ability and their efforts during 1929 should be more effective than they have been in the past. Their markets for cars, trucks, replacement and repair parts, accessories and every other automotive item are constantly increasing.

Foreign trade continues to expand not only in the shipment of completely assembled motor vehicles, which were larger than ever during 1928, but also in the rapidly growing foreign assembly operations, which during 1928 kept some 40 foreign plants busy assembling and selling some 229,000 vehicles. Total foreign sales of motor vehicles of American design—that is,







Changes in Automotive Executives—November, 1927, to November, 1928

Title of Executive	Automobiles	Commercial Vehicles	Buses	Tractors	Motorcycles	Aircraft	Engines	Industrial Equipment	Net Totals (1)
	19	33	14	9		12	16	27	82
	06	98	52	33		33	54	69	282
Sec	29	36	25	17		23	32	42	116
	31	34	22	18	1	27	31	26	111
Gen. Mgr	38	54	26	13	1	28	43	50	162
Works Mgr	27	32	18	13		21	37	35	119
Supt	36	51	20	8	1	29	40	41	162
Prod. Mgr	22	32	20	5	* *	14	18	22	90
Prod. Engr	5	3	3	1		2	3	1	15
	57	79	31	12	* *	29	. 48	50	188
	46	43	25	8	4 5	9	26	18	98
	36	42	16	5	3	12	29	21	105
	65	52	28	18	5	34	50	48	217
	21	23	11	5	i	1	3	5	35
Tool Engr	20	22	7 5	5		6	12	9	55
Fdy. Supt	4	05		2	4.5		12	16	32
	18 15	25 16	14	i	* *	3	8 5	2	36
		30	11	10	i	5	9	2 2 22	32
Mch. Shop Supt. Paint Shop Supt.	22 12	19	15 15	12	-	8	27	22	84
Drop Forge Supt.	6	7	5	6		10	6	1	46
Sales Mgr	72	82	33	22		28	57		11
4 3 3 #	36	47	17	5	2 2	20	38	68 51	256
	11	265	168	38	6	32	102	81	145 623
Net Totals (2) 9	83	910	455	196	22	291	577	571	4005
(1) The changes j									

(2) Net changes in individuals for each product, duplicated in other columns where a concern makes two or more products.

Chilton Factory List of Automotive Industrial Red Book

On the Industry's Highway



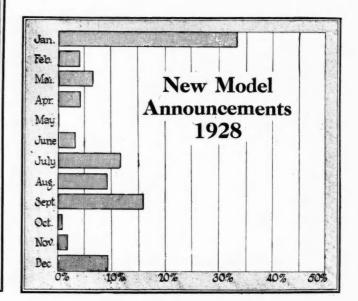


United States exports plus Canadian output—were nearly 825,000 during 1928, practically twice as much as they were just four years ago. This market seems certain to expand in the future and offers for American vehicles an outlet such as is needed to balance the fluctuations in domestic consumption.

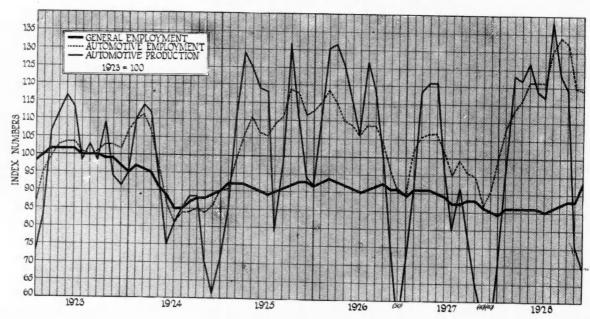
Again, in 1928 almost twice as many cars were sold for replacement purposes as were disposed of to new car buyers. With the 1929 replacement market approximately 2,500,000 vehicles, the job of selling over 3,000,000 vehicles during the year becomes considerably reduced in size.

Materials Used in the Automotive Industry—1928

Material	Amount U	sed		cent of Output
Steel	5,600,000	ton	S	16
Nickel	11,500,000	lb.		29
Aluminum1	20,000,000	lb.		40
Copper2	50,000,000	lb.		13
Plate Glass	65,000,000	sq.	ft.	60
Rubber8	14,000,000	lb.		85
Leather	42,200,000	sq.	ft.	65
Hardwood Lumber9	75,000,000	bd.	ft.	15
Tin	17,000	ton	S	23
Zinc	24,000	tons	S	4
Lead	148,000	ton	S	18
Cotton Fabric 2	99,500,000	lb.		



Trend in Production and Employment



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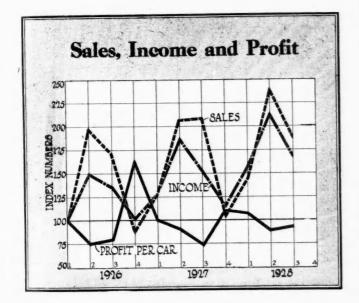
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On the Industry's Highway

On page 264 is a chart of interest to all automotive manufacturers, showing, as it does, the downward trend in the number of concerns engaged in the manufacture of various items of parts, accessories, equipment and supplies. In the chart directly above it is shown that, even though this tendency is common throughout the industry, the total value of products manufactured and the value of products per establishment continues to increase.

Total retail sales of automotive products for 1929 are estimated to be very close to \$8,750,000,000. Of this total retail sales of passenger cars and trucks will contribute only about 37 per cent, the remainder being spread among the parts accessories and supplies of the "after-market."





Total Foreign Consumption of Motor Vehicles of U. S. Design

	Year	United States Exports	Canadian Production	Total Foreign Consumption	
	1913	28,486		28,486	
	1914	27,574		27,574	
	1915	67,373		67,373	
	1916	85,364		85,364	
	1917	85,092	93,810	178,902	
	1918	51,260	82,408	133,668	
	1919	56,389	87,835	144,224	
	1920	177,297	94,144	271,441	
	1921	60,739	66,246	126,933	
	1922	125,880	102,053	227,980	
	1923	240,091	146,438	386,529	
	1924	293,115	135,246	428,361	
ı	1925	428,564	161,389	589,953	
	1926	393,600	204,727	598,327	
	1927	462,880	178,427	641,307	
	1928	582,277	242,382	824,659	
П					



	1925	1926	1927	1928
Crude rubber con- sumption for cas- ings, solid tires and tubes—millions of				
oounds	739	691	687	750
Cotton Fabric consumption for tires—millions of pounds	224	221	237	280
Total pneumatic tire		21		
production—hundred				
thousands	608	615	644	723
Solid and cushion tire production—	1,012	750	744	635
Inner tube produc- tion—hundred thou-				
sands	826	766	708	750

NAME OF COMPANY	of Comm Outst (Thous	t Value non Stock anding ands of lars)	Ratio of Current Assets to Current	E	Net Income Pep:eciation, I Taxes. Calen	nterest,	Income Common re	NAME OF COMPANY	of Comm Out sta (Thousa	Value on Stock anding ands of ars)	Ratio of Current Assets to Current		Net Incom After Depress Interest and Calendar Y	ation, Taxes	Income
	2/5/29	1/1/28	Liabilities	Year	Tol	tal	Net In Per Co		2/5/29	1/1/28	Liabilities	Year	Tota	ı	Net In
Auburn Automobile Co.	\$20,899	\$12,062	6.7 11/30/28	1928 1927 1926	\$1,133,000 \$1,279,000 \$943,262	Nov. 30)	\$8.01 \$10.02 \$11.11		\$8,720	\$4,350	2.2 9/30/28	1928 1927 1926	\$363,000 \$469,174 \$448,319	, , ,	\$1. \$2. \$2.
Chandler-Cleveland Motors Corp.	\$6,160	\$7,140	1.9 10/31/28	1928 1927 1926	\$62,000 \$845,170 \$401,330		Nil \$0.55 Nil	Bohn Aluminum & Brass Co.	\$41,300	\$12,400	3.2 12/31/27	1928 1927 1926	\$2,472,000 \$1,181,606 \$873,744	(9mo.)	\$7. \$3.
Chrysler Corp.	\$499,856	\$197,000	3.3 9/30/28	1928 1927 1926	\$21,786,000 \$19,484,880 \$15,448,587		\$4.71 \$6.55 \$4.77		\$59,450	\$16,200	4.8 11/30/28	1928 1927 1926	\$4,106,000 \$3,055,402 \$907,222	(11mo.)	\$10. \$6. \$7.
Dodge Bros., Inc. Inc. in Chrysler for 1928	,	\$176,000		1927 1926	\$7,649,119 \$21,591,920		\$1.33 \$6.46		\$109,163	\$46,000	4.3 12/31/27	1928 1927 1926	\$3,953,650 \$1,155,729 \$8,178,513	(9mo.)	\$1 80 \$4
Durant Motors, Inc.	\$32,873	\$20,360	2.4 8/31/27	1928 1927 1926	Not Availa	ble		Budd E. G. Mfg.	\$12,720	\$19,650	EL	1928 1927 1926	\$1,174,000 \$1,703,704 Not Availa	(d.)	\$3 Nil
Ford Motor Co. of Canada, Ltd.	\$44,100	\$39,200	13.2 12/31/27	1928 1927 1926	Not Availa \$171,222 \$5,341,177	ble	\$2.44 \$76.30	C. G. Spring & Bumper Co.	\$2,364	\$2,572	3.2 12/31/28	1928 1927 1926	\$226,000 \$318,656 \$547,719	(d.) (Fiscal	Nil
Franklin (H. H.) Mfg. Co.	\$10,482	\$10,000	9.4 12/31/27	1928 1927 1926	Not Availa \$226,933 \$72,381	ble	Nil Nil	Continental Motors	\$43,585	\$26,400	6.4 10/31/28	1928 1927 1926	\$1,802,000 \$1,249,000 \$2,026,327	-	\$1. \$0. \$1.
Gardner Motor Co.	\$5,062	\$2,565	4.5 12/31/27	1928 1927 1926	\$202,000 \$120,070 \$24,029		\$0.81 Nil \$0.16	Eaton Axle & Spring	\$22,125	\$6,750	2.6 10/31/28	1928 1927 1926	\$1,198,000 \$779,000 \$962,054		\$4 \$3 \$3
General Motors Corp	\$3,665 Million	\$2,500 Million	3.5 9/30/28	1927	\$240,535,000 \$239,264,725 \$176,698,743		\$13.42 \$13.18 \$19.36	Elec. Auto-Lite Co.	\$146,850	\$22,500	2.5 3/31/28	1928 1927	\$674,687 \$6,449,000 \$2,363,475 \$1,777,693	(9mo.)*	\$7. \$9.
Graham-Paige Motors Co.	\$67,997	\$18,730	2.1 6/30/28	1928 1927 1926	\$2,493,000 \$1,067,066 \$500,206	(d.)	\$1.27 Nil \$0.49	Gabriel Snubber	\$6,484	\$5,400	6.2	1926	\$332,000		\$7.
Hudson Motor Car Co.	\$140,908	\$129,000	3.3 12,31/28	1928 1927 1926	\$13,457,000 \$14,431,000 \$5,372,874		\$8.43 \$9.04 \$3.66	Mig. Co.			9,30/28	1927 1926	\$960,331 \$1,033,630 \$1,314,081		\$4 \$5
Hupp Motor Car Corp.	\$107,241	\$34,150	3.6 11/30/28	1928 1927 1926	\$6,695,000 \$2,719,164 \$3,507,629		\$6.34 \$2.70 \$3.49	Wheel Corp. Marlin-Rockwell		\$11,200 \$16,500	2.7 12/31/27 9.9	1928 1927 1928	\$477,000 \$631,877 \$1,404,000		\$1 \$1 \$3
Jordan Motor Car Co. Inc.	\$3,914	\$2,500	14.7 9/30/28	1928 1927 1926	\$542,000 \$1,425,753 \$96,794	(d.)(9mo.) (d.)	Nil Nil Nil	Corp. Martin-Parry Corp.	\$2,079		12/31/27	1927 1926 1928	\$961,086 \$1,124,394 \$620,000		\$2 \$3 Nil
Marmon Motor Car Co.	\$18,720	\$10,500	2.8 6/30/28	1928 1927 1926	\$1,565,000 \$1,239,532 \$1,669,800	(Yr .end	\$7.56 \$5.84 \$8.00		\$4,400		8/31/28	1927 1926 1928	\$5,235 \$517,842 \$560,000	Years end. Aug. 31	\$0. \$4.
Moon Motor Car Co.	\$2,800	\$1,680	3.7 12/31/27	1928 1927 1926	Not Availa \$148,000 \$498,639	ble (d.)	Nil Nil	Inc. Motor Wheel Corp.		\$11,000	9/30/28	1927 1926 1928	\$720,260 \$1,750,048 \$2,236,000		\$3 \$8 \$4
Nash Motors Co.	\$306,442	\$273,000	5.4 11/30/27	1928 1927 1926	\$20,820,000 \$22,671,000 \$23,346,306	(Yr. end Nov. 30)	\$7.62 \$8.30 \$8.50		\$6,800		9/30/28	1927 1926 1928	\$1,542,834 \$1,625,052 \$732,590		\$2 \$2 \$6
Packard Motor Car Co.	\$429,572	\$186,000	3.9 11/30/28	1928 1927 1926	\$25,692,000 \$13,441,000 \$15,843,586	(Yr. end	\$8.55 \$4.48 \$5.27			\$11,900	9/30/28	1927 1926 1928	\$588,000 \$301,089 \$1,342,000	*	\$5. \$1.
Peerless Motor Car Corp.	\$5,506	\$5,400	5.9 9/30/28	1928 1927 1926		(d.)(9mo.) (d.)	Nil Nil \$3.55	America			9/30/28	1927 1926 1928	\$260,741 \$1,646,000 \$39,000	(11mo.)*	\$0.
Pierce-Arrow Motor Car Co.	\$6,707	\$13,300	8.3 9/30/28	1928 1927 1926	\$1,038,000 \$783,201 \$1,267,695	(d.)(9mo.) d.)	-		\$20,627		9/30/28	1927 1926 1928	\$162,369 \$156,198 \$1,186,000	(d.) (d.)	Nil Nil 83
Reo Motor Car Co.	\$56,000	\$52,000	5. 9/30/28	1928 1927 1926		(9mo.) (Yrs. ended	-		\$28,536		12/31/27	1927 1926 1928	\$1,116,352 \$1,638,990 \$1,213,000	*	\$2
The Studebaker Corp.	\$179,062	\$121,600	3.9 9/30/28	1928 1927 1926	\$12,731,000 \$11,937,862 \$13,042,119	(9mo.)	\$6.58 \$6.09	Co.	\$84,000		6/30/28	1927 1926 1928	\$631,705 \$197,384	* June 30)	\$1
Stutz Motor Car Co. of America, Inc.	\$4,893	\$5,190	1.6 12/31/27	1928 1927 1926	\$415,000 \$365,512	(6mo.)	\$6.67 \$1.78 \$1.57	Speedometer Corp.	\$9,956		9/30/28	1928 1927 1926 1928	\$7,753,000 \$5,210,053 \$5,108,885 \$380,000		\$12 \$8 \$8 \$8
Willys-Overland, Inc.	\$93,000	\$73,500	3.1 9/30/27	1928 1927 1926	\$7,531,000 \$6,341,520 \$1,819,690	(9mo.)	\$2.65 \$2.04 \$0.23	Carburetor Co. of America	\$26,499		9/30/28	1928 1927 1926	\$168,500 \$463,146		\$4 \$2 \$5
Federal Motor Truck Co.	\$10,227	\$9,120	8.5 12/31/27	1928 1927	\$214,203 \$447,556 \$1,222,850	(6mo.)	\$0.45 \$0.99	Axle Co.		\$160,000	6/30/28	1928 1927 1926	\$716,000 \$1,540,530 \$1,772,460		\$1 \$1 \$1
Mack Trucks, Inc.	\$86,610	\$104,000	3.6 6/30/28	1926 1928 1927	\$4,452,000 \$5,844,307	(9mo.)	\$6.05 \$6.60	Bearing Co.			6/30/28	1927 1926	\$6,395,000 \$10,221,537 \$9,854,310		\$5 \$8 \$8
White Co.	\$41,600	\$33,000	8.5 12/31/28	1926 1928 1927	\$8,852,453 \$2,320,000 \$895,000 \$2,566,291		\$9.86 \$2.90 Nil		\$2,250	\$8,000	3.0 12/31/27	1928 1927 1926	Not Availa \$504,000 \$577,450		\$2 \$2
Yellow Truck & Coach Mfg. Co.	\$52,000		7.0 9/30/28	1926 1928 1927 1926	\$2,566,291 \$700,000 \$6,858,692 \$1,125,922		Nil Nil \$0.06	* Before Taxes. † To Nov. 30. ‡ After ded. div EL Current liak	on pref.			d Dei	licit		

ing Corp.

Mechanical Device Co.

Biflex Products Co.

Recent Combinations of Automotive Corporate Interests

NEW CORPORATION OR BUYER OTHER CONCERNS OTHER CONCERNS January, 1928 September, 1928 Van Dorn Electric Tool Co. Black & Decker Mfg. Co. Landers Corp. Landers Bros. Co. Biflex Products Co. L. P. Halladay Co. Toledo Auto Fabrics Co. Gears & Forgings, Inc. Van Dorn & Dutton Co. American Buckram Weaving Wm. Ganschow Co. & Finishing Co. Fawcus Machine Co. North East Electric Co. North East Service, Inc. Ohio Forge Co. LeBlond-Schacht Truck Co. O. Armleder Motor Truck Co. Wilcox-Rich Corp. Rich Products Corp. February Wilcox Products Corp. W. D. Nagel Elec. Co. Saf-T-Stat Co. Trailer Co. of America. J. I. Case Plow Works, Inc. Trailmobile Co. Massey Harris Co. Cleveland Piston & Mfg Co. The Houpert Machine Co. Lapeer Trailer Corp. McQuay-Norris Mfg. Co. Splitdorf - Bethlehem Elec-King Quality Products Co. October Electric Auto-Lite Co. Eclipse Machine Co. trical Co. American Electric Motor Co. Eaton Axle & Spring Co. Allied Products Corp. Indiana Lamp Corp. Perfection Heater & Mfg. Co. Brockway Motor Truck Victor-Peninsular Co. Indiana Truck Co. Richard Bros. Die Works. Corp. Diamond Motor Parts Co. Gill Mfg. Co. Bendix Corp. Eclipse Machine Co. Schlieder Mfg. Co. Black & Decker Mfg. Co. Domestic Electric Co. Keystone Aircraft Corp. Loening Aeronautical En-March gineering Corp. Allis-Chalmers Mfg. Co. Monarch Tractor Corp. General Motors Corp. Guide Motor Lamp Co. Detroit Motor Appliance Co. Pines Winterfront Co. Hershey Corp. Hershey Mfg. Co. Wheeler-Schebler Carburetor Marvel Carburetor Co. Kelvinator Corp. Co. Grant Storage Battery Co. Empire Electric Mfg. Co. Deveraux Co. T. D. Shepard Co. Battle Creek Farmer Lub-Farmer Lubricating Systems, November ricating Devices. New York Car Wheel Co. Houde Engineering Co. Gem Auto Devices Co. Sterling Auto Devices Co. Ireland & Matthews Mfg. Co. Autopulse Corp. April Hupp Motor Car Corp. Chandler - Cleveland Motors Follen-Strom Mfg. Co. Lorenz Tool Co. Corp. Marwin Motor Truck Co. Elgin Clock Co. Henney Motor Co. Unit Corp. of America. Fuller & Sons Co. December Openberger Forge Co. McNally-Tollefson Co. Dallmann Machine & Mfg. Co. Liberty Foundry Co. Hydraulic Pressed Steel Co. Spring City Fdry. Co. Truscon Steel Co. Rich Tool Co. Wilcox-Rich Corp. Borg-Warner Co. Borg & Beck Co. Curtiss Aeroplane & Motor Marvel Carburetor Co. Reid Aircraft Co., Ltd. Co., Inc. Mechanics Machine Co. Swallow Airplane Co. Warner Gear Co. General Aero Corp. Cessna Airplane Co. Atlas Engineering Co. Topp-Stewart Tractor Co. Hahn Motor Truck Corp. Selden Truck Corp. Electric Auto-Lite Co. Columbus Auto Parts Co. Electric Auto Light Co. U.S.L. Battery Corp. Boening Airplane & Transport Corp. United Aircraft & Trans-Sterling Motor Truck Co. Corbitt Truck Co. port Co. Oakes Products Co. Oakes Co. Pratt & Whitney Aircraft Co. Chance Vought Corp. Madison-Kipp Corp. Detroit Lubricator Co. Chrysler Corp. Dodge Bros., Inc. North American Aviation, General Parts Co. Lancaster Tire & Rubber Co. Sperry Gyroscope Co. Brunner Mfg. Co. Air Scale Co. January, 1929 June Pittsburgh Plate Glass Co. Spray Engineering Co. Ditzler Color Co. Spraco, Inc. Lyon Metal Products Co. Duran Steel Locker Co. Spraco Painting Equipment Lyon Metallic Mfg. Co. Co. Heil Co. Perfect Circle Co. Hydro-Hoist Co. Spicer Mfg. Co. Brown-Lipe Gear Co. Long Mfg. Co. Universal Monogram Co. General Piston Ring Co. Borg-Warner Corp. Zapon Co. Duratex Corp. Van Sicklen Corp. Highway Trailer Co. Continental Axle Co. Auburn Automobile Co. Central Mfg. Co. Briggs & Stratton Corp. Evinrude Motor Co. Borg-Warner Corp. Galesburg-Coulter Disc Co. Wisconsin Parts Co. Timken-Detroit Axle Co. Trindl Corp. Trindl Corp. Woodstock Motor Valve Co. Diamond Piston Ring Co. Houdaille-Hershey Corp. Houdaille Corp. Manning, Maxwell & Moore. American Schaeffer & Buden-Hershey Corp. berg Corp. Oakes Products Corp. Motor & Equipment Assn. Automotive Equipment Assn. Motor & Accessory Mfrs. February Assn. Elite Mfg. Co. Warchel Corp. Henney Motor Co. Weatherproof Body Corp. Ward-Love Pump Corp. August J. H. Channon Corp. Diamond Motor Parts Co. Security Muffler Corp. Gardner Motor Car Co. Parks Aircraft Corp. Studebaker Corp. of Amer-Thermoid Co. Thermoid Rubber Co. Pierce-Arrow Motor Car Co. Stokes Asbestos Co. Fabric Products Corp. Gates Mfg. Co. Thompson Products, Inc. Cleveland Piston & Mfg. Co. Habig Mfg. Co. Cox Tool Co. Williams Oil-O-Matic Heat-C. G. Spring & Bumper Co. General Spring Bumper

Corp.



On the Industry's Highway

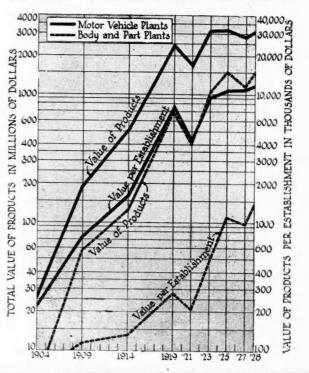


Facts About Distribution— 1927-1928 *

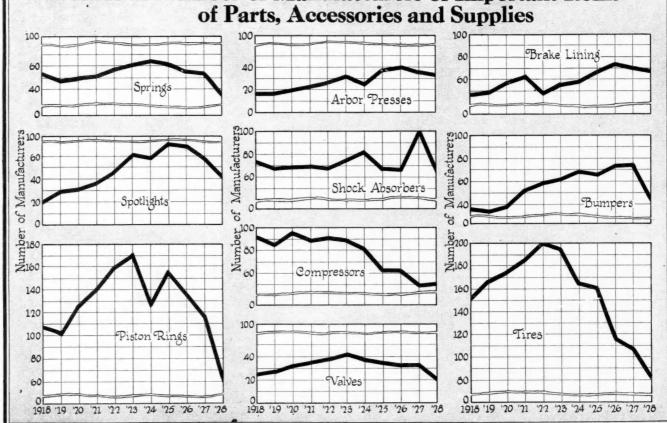
7 1928
1920
62
\$40,176
320
367
\$648
\$ \$704
1,020,000
-,,
2,300,000
-,,
2 71
51,471
25,800
5 95,400
79,000
4 51,600

* Where one establishment operates more than one department, as car dealer, truck dealer, accessory and supply store, etc., it is counted once for each function.

Growth of Automotive Concerns



Trends in Number of Manufacturers of Important Items of Parts, Accessories and Supplies



Just Among Ourselves

Statistics Dealing With an Automobile Quiz

SINCE it seems necessary for us to say something about statistics in this issue, we'll do our best although if we said everything we think about some statistics we'd probably get ourselves in trouble . . . First thing that comes to mind is we got 96 per cent on an "Ask Me Another" quiz regarding automobiles which was in the New York Sunday World magazine section last week. As soon as we saw the quiz, we thought that we might get a "Just Among Ourselves" item out of it, but decided confidentially with ourself that if we didn't make at least 95 per cent on it we'd better not say anything about having tried it.

Three-Pointed Star is Stumbling Block

THERE were 50 questions so each one answered incorrectly cost two points. We didn't know what car bears on its nameplate a three-pointed star; nor what car has adopted a crest in place of a nameplate in 1929. The three-pointed star, it appears, is carried by Mercedes, the only foreign car mentioned in the quiz, despite the fact that one questions asks, "Which car has a V-shaped radiator?" If foreign cars were to be included, they should have been involved in the answers to a number of other questions in addition to the American cars which were given as the answers. Anyhow that's our alibi on the Mercedes proposition. Oldsmobile is the car which has adopted a crest in place of nameplate in 1929. We have no alibi on that; we just didn't remember. One question is "What car has a Pike's Peak motor?" That just got under the wire; six months from now the answer will doubtless be "Not any."

Interesting to Test Women's Knowledge

TEST of this kind, incidentally, is interesting to try on your lady friends. We guarantee that you will be overwhelmed at surprise to find how many widely advertised names, slogans, etc., which you know as you know your alphabet are totally or inaccurately conceived by the lay woman. One lady of our acquaintance, quite familiar with many things automotive, got 75 on the test, but didn't know what car is called "the 400"; what car "the Challenger"; what car "the Mate and the Master." She wasn't sure whether Chevrolet or Whippet has "finger tip control," but finally decided correctly on Whippet. And what struck us more forcefully than these, she had no idea as to what popular car has a sleeve valve engine. All of which indicates that there is good deason for the time and money being spent in merchandising and advertising; and also, it seems to us that it takes many years rather than many months actually to establish a name or a conception clearly and firmly in the mind of the general public.

Law Makers Busy With Car Legislation

BUT that hasn't much to do with statistics . . . Let's see . . . mm . . . Oh, yes; here are some more statistics we got the other day from Russell Huffman, secretary, Motor Vehicle Conference Committee. Fortythree out of the 48 state legislatures are meeting this year, he tells us, and it is probable that somewhere between 2500 and 3000 proposed laws affecting automotive matters will have been introduced before the year is out. More than 1500 already have been propounded and are being argued. It is trite, we know, to say that some means of regularly and consistently enforcing laws already on the statute books is more necessary than additional laws; we remark it just the same because it is true. Apparently progress is being made, however, in getting more widely adopted into state laws various phases of the Hoover uniform motor vehicle code—that's the bright side of the picture.

Title of Book is Misleading

Having finally completed that compendium of articles by writers with prominent names which is bound into a book with the intriguing title "Whither Mankind," we continue to be almost as much disappointed as we were shortly after starting it. It's too much like some of the regretted articles we have written ourselves with a some such headline as "The Outlook for the Next Quarter" when the discussion really was concerned chiefly with a review of what happened in the last quarter. This volume is 99 per cent a discussion of "Whence Mankind" and only very occasionally and discreetly concerned with talking of "Whither Mankind." There is a certain value, unquestionably, in an intelligent outline of what has happened for those who have the past course of events only hazily in mind. But when the title of a discussion indicates that it is to be concerned chiefly with the future, we feel just a bit "sold" when it isn't. In such an article or book we feel justified in expecting that just so much summary of the past be included as is necessary to a coherent understanding of what is to be said about the future. Those chapters devoted to topics about which you know least, we believe, you will find both interesting and instructive. That's why we especially enjoyed Louis Mumford's Chapter on Art .- N.G.S.

Retail Financing Data

Number of New Cars Financed—1928

Total Sales 3,220,000



No. Financed 1,870,000



Number of Used Cars Financed-1928

Total Sales 3,760,000



No. Financed 2,258,000



Money Invested in New Car Sales-1928

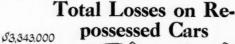
Money Invested in Retail Financing . . . \$1,133,220,000

Money Invested in Used Car Sales-1928

Retail Value of Used Cars Sold. \$1,646.880,000

Money Invested in Retail Financing . . . \$ 666,110,000

Total Number of New Cars Repossessed







Proportion of Financing Placed on Standard Terms

Average Outstanding Liabilities of Finance Companies Loss per Repossessed Car -Standard Terms

1926 . . . 84% 1927 . . . 86% 1928 . . . 87% New \$611,940,000 Used \$346,377,000 1926 . . . \$65 1927 . . . \$43 1928 . . . \$56



Vehicle Sales Up 19% in 1928

Twelve producers sell 98 per cent of total. Car and truck dealer outlets are increasing

By K. W. Stillman

SALES of both cars and trucks for 1928 were considerably greater than in any previous year except 1926. Production last year was greater even than in 1926, the excess sales having been made in foreign markets. This sales record was made despite the fact that during 1928 Ford failed to expand his production facilities, as had been expected, whereas he was in full production throughout 1926. Ford sales during 1928 in proportion to total sales were even smaller than during 1927 when his production lines were entirely shut down for about half the year.

It is interesting to note that during both 1927 and 1928 the sales of General Motors units occupied the same relative position in the industry as a whole as Ford did in 1925, having supplied over 42 per cent of all cars sold during those two years. With Ford apparently once more under full way at the opening of the 1929 selling season, with a new model for sale, with only slightly decreased dealer representation and with an aggressive advertising campaign launched, it is going to be very interesting to see how far he will be able to recover his old position and at whose expense it will be done if it is accomplished.

In the table alongside, the importance of the recent mergers and consolidations among vehicle makers is made readily apparent. Nash and Packard are the only manufacturers of a single make of car who have been able to sell 1 per cent or more of the total cars sold during the last four years. The 12 interests listed in the table accounted for over 98 per cent of total sales during 1928, a small increase over previous years.

Sales throughout the country increased 19 per cent over 1927 but represented a 6 per cent decrease from 1926. In this connection it is interesting to note that the industry appears able to maintain a very close relation between production and profits, a recent analysis of the 1928 earnings of six car companies producing over 45 per cent of the industry's total, showing an average gain of 19 per cent as compared with 1927. This, it will be seen, is in direct ratio to the gain in production.

Sales during 1928 were particulary good, compared with those of 1927, in New England, the East North

Approximate Percentages of Total Car Sales Contributed by Leading Makers

192	28 1927	1926	1925
General Motors 42	.4 42.6	27.2	20.0
Buick 6	.3 8.9	7.0	5.5
Cadillac 0	.6 0.7	0.7	0.7
Chevrolet 25	.4 24.8	15.0	11.5
LaSalle 0	.6 0.4		
Oakland 1	.2 1.6	1.5	1.2
Oldsmobile 2	.4 1.9	1.5	1.1
Pontiac 5	.9 4.3	1.5	
Ford Interests 14.	4 15.2	36.3	42.8
Lincoln 0	.2 0.2	0.2	0.2
Ford 14	.2 15.0	36.1	42.6
Chrysler Interests 10	.8 10.5	10.7	9.1
Chrysler 4	.8 5.8	3.9	3.5
De Soto 0	.4	* * * * *	
Dodge 4	.7 4.7	6.8	5.6
Plymouth 0	.9		
Willys Interests 7	.6 5.5	4.3	5.3
	.1 3.7	2.9	3.9
	.3 1.5	1.4	1.4
	.2 0.3		
Hudson-Essex 7	.3 8.5	6.1	6.8
Essex 5.		4.0	4.0
Hudson 1.		2.1	2.8
Nash 3	.7 4.2	3.6	2.4
Studebaker Interests 3.	6 3.8	3.1	3.8
Erskine 0	.7 0.3		
	2 0.2	0.2	0.2
Studebaker 2	7 3.3	2.9	3.6
Hupp Interests 2.	3 2.0	1.5	1.3
Chandler 0.	5 0.7	0.4	0.3
Hupmobile 1.	8 1.3	1.1	1.0
Durant Interests 2	.3 2.2	2.9	3.0
Star 1.	3 2.1	2.5	2.4
Others 1	.0 0.1	0.4	0.6
-	.9 0.7	0.5	1.1
Jewett			1.0
	.9 0.7		
Paige		0.5	0.1
Packard 1	.4 1.2	0.9	0.8
Reo 0	.7 0.8	0.3	0.5
All Others 1	.6 2.8	2.6	3.0
Total100	.0 100.0	100.0	100.0





Central zone, the West North Central zone, and the West South Central.

The East North Central zone, consisting of Ohio, Indiana, Michigan, Illinois and Wisconsin, registered the greatest increase over 1927—31 per cent. In this zone also, as well as in New England and the Middle Atlantic States, 1928 sales were even ahead of those of 1926, while in the Mountain States 1928 sales were practically the same as in 1926 but 17 per cent ahead of 1927.

The map on page 269 shows the 288 cities in which M.E.A., N.S.P.A. and N.A.P.A. jobbers are located and gives a very good idea of the blanket coverage of the entire country obtained by these wholesale outlets for parts, accessories, supplies and equipment. Dots on the map represent cities and not jobber outlets since in many of the larger cities there is more than one concern handling the products of the members of the three associations.

There are nearly 2000 more dealers handling passenger cars in 1929 than there were during 1928 and nearly 2000 more truck dealers. Additions in both lines have been made by other makers than Ford, since his dealer representation declined slightly during 1928 but not enough, apparently, to affect his 1929 sales efforts to any degree.

The proportion of cars and trucks in each State remains fairly stable with the relative number of trucks increasing somewhat more rapidly than passenger cars. In 1928 truck registrations represented 13.1 of the total while a year ago they were 12.7 per cent.

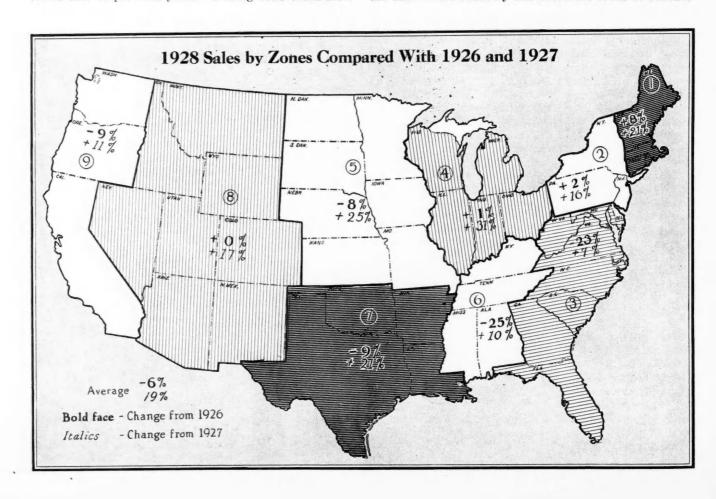
In general the distribution of trucks by states followed that of previous years. During 1928 truck sales in California, Illinois, Iowa, Massachusetts, Ohio and Texas, in particular, were considerably better, relatively, than they were a year ago, while in several other states, such as Florida, Indiana, Mississippi and New Jersey, sales of commercial cars declined relatively from those of 1927.

The same general trend is also apparent in the distribution of passenger car sales. In most states proportionate sales in 1928 were much the same as in 1927 with a few states like Arkansas, Michigan, Nebraska, New York, Ohio and Wisconsin registering unusual increases, and some others, such as California, Indiana, and Pennsylvania, failing to take as many in 1928 as they did the year before.

One interesting change in marketing facts is the great increase in the number of Ford dealers who handle accessories. During 1927 about 85 per cent of Ford dealers carried these side lines while last year the relative number increased to over 92 per cent, a rather obvious reaction from the period late in 1927 when Ford dealers had nothing to sell unless they did handle accessories.

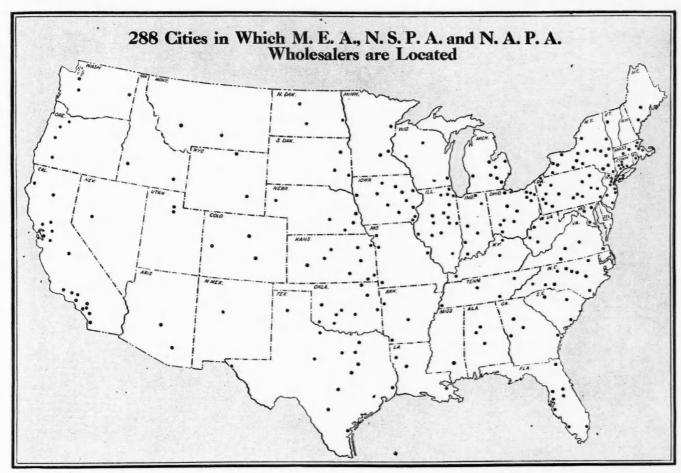
Contrary to this trend on the part of Ford dealers, available information indicates that the number of non-Ford dealers who handle accessories declined from 74 per cent in 1927 to 72 per cent in 1928.

On page 272 is a chart showing the origin of new car dealers signed during 1928 which offers some very valuable information to manufacturers seeking to increase the number of their dealer outlets. The most interesting fact brought out is that 77 per cent of all the new dealers signed up came from some branch of the automotive industry and therefore could be reached









through the regular dealer and service channels.

Another very interesting point is that only 29 per cent of the new dealers were previously owning and operating garages, repair shops or other automotive establishments, but that 48 per cent of the embryo dealers were employees in various types of automotive establishments. This information should be of real value in determining methods for reaching prospective dealers with sales and advertising literature.

The distribution of Ford and non-Ford dealers by

town sizes shows no change from previous years. In small towns and villages with less than 2500 population Ford has over 66 per cent of his dealers while only 44 per cent of all other dealers are located in these centers.

In towns of population from 2500 to 25,000, Ford has 24 per cent more of his dealers, while all other makers have 37 per cent of their retail outlets here. In the largest centers of over 50,000 population Ford has 10 per cent of his retail outlets while other makers have nearly 20 per cent.

Registrations, Sales and Dealer Outlet Data

Zone	Motor Vehicle Registrations Dec. 31, 1928	Car Sales 1928	No. of Car Dealers	Car Sales per Dealer	No. of Service Stations or Repair Shops	Car Registra- tions Per Service Station	No. of Accessory Outlets	Car Registra- tions Per Accessory Outlet	
New England	1,555,000	225,000	3,151	71	6,433	236	4,062	324	
Middle Atlantic	4,491,000	638,000	8,975	71	17,741	254	13,169	283	
South Atlantic	2,426,000	299,000	4,516	66	7,317	330	6,539	326	
East North Central	6,001,000	805,000	12,482	64	22,464	268	18,770	278	
West North Central	. 3,393,000	422,000	9,866	43	15,832	212	13,126	228	
East South Central	1,122,000	151,000	2,317	65	4,061	274	3,486	283	
West South Central	. 2,291,000	306,000	3,831	80	7,863	290	6,657	299	
Mountain	. 824,000	111,000	2,479	45	4,057	201	3,865	186	
Pacific	2,392,000	263,000	3,663	72	8,999	266	7,976	262	
United States	24,496,000	3,220,000	51,280	63	94,767	257	77,650	273	





	il Div.—Chilton Class CARS ord Non-Ford 27 329 35 174	Ford 126	UCKS Non-Ford	Trucks in Each	
	27 329		Non-Ford		PT 3
Alabama 13		170	168		Trucks
	55 174			Ala85.5	14.5
		35	82	Ariz91.4	8.6
Arkansas 14		142	157	Ark83.2	16.8
	30 1,867	360	749	Cal87.3	12.7
	540	101	230	Col92.0	8.0
Connecticut		44	180	Conn 84.5	15.5
	$27 \qquad 56$	27	12	Del80.4	19.6
Dist. of Col.	9 49	9	22	D.C89.3	10.7
	17 370	117	137	Fla84.2	15.8
	91 413	180	215	Ga 87.4	12.6
Idaho	63 281	63	142	Ida88.7	11.3
	64 2,712	464	872	III87.4	12.6
Indiana 2	51 1,350	251	378	Ind 85.6	14.4
Iowa 34	1,648	346	838	Iowa 91.6	8.4
Kansas 30	05 1,289	280	680	Kan89.2	10.8
	632	154	275	Ken 89.7	10.3
	30 281	130	128	La	14.4
	361	80	118	Me 83.1	16.9
	84 402	84	150		3.5
	71 1,118	171	347	Md96.5	
	73 1,683	370	726	Mass 88.4	11.6
	53 1,577	325	666	Mich86.8	13.2
	53 340	152	166	Minn86.5	13.5
				Miss86.8	13.2
	96 1,186	296	434	Mo89.6	10.4
	78 375	75	199	Mont 82.6	17.4
	36 1,075	260	544	Neb92.5	7.5
	20 91	18	43	Nev 79.6	20.4
	41 239	41	72	N.H86.3	13.7
	53 1,313	161	449	N.J81.8	18.2
	149	44	44	N.M96.4	3.6
	3,313	425	1,279	N.Y 81.5	18.5
	89 650	185	305	N.C 90.9	9.1
N. Dakota 1		160	301	N.D 88.9	11.1
	34 2,815	430	950	Ohio87.9	12.1
Oklahoma 2	48 711	245	329	Okl90.0	10.0
	94 442	90	155	Ore91.0	9.0
Pennsylvania 5	3,251	495	1,116	Pa85.9	14.1
Rhole Island	10 202	10	77	R.I84.6	15.4
S. Carolina 1	08 276	105	113	S.C89.4	10.6
	46 645	146	290	S.D89.5	10.5
	38 444	135	221	Tenn 90.8	9.2
	83 1,504	483	666	Tex86.9	13.1
	16 226	45	106	Utah85.5	14.5
	34 225	34	97	Vt 91.0	9.0
	92 738	190	312	Va84.8	15.2
	43 776	140	278	Wash85.6	14.4
	99 704	95	304		14.4
Wisconsin 3		$\begin{array}{c} 95 \\ 320 \end{array}$	781	W.Va85.7	
	25 2,055 34 228			Wis86.9	13.1
wyoming	440	32	104	Wyo86.9	13.1
Total8,8	40 42,631	8,671	17,007	Total86.9	13.1





Truck Sales by States—1928			Passenger Car Sales by States—1928			
Approximate F		et 11007	Approximate Fig		or 11022	
Sales	% of Total	% of 1927 Total	Sales	% of Total	% of 1927 Total	
Alabama 6,600	1.86	1.8	Alabama 35,700	1.11	1.31	
Arizona 1,600	0.46	0.4	Arizona 12,700	0.40	0.36	
Arkansas 3,400	0.96	1.5	Arkansas 27,100	0.84	1.15	
California17,800	5.05	4.7	California196,600	6.10	6.57	
Colorado 3,800	1.08	1.1	Colorado 33,900	1.05	1.12	
Connecticut 6,700	1.89	2.1	Connecticut 48,300	1.50	1.55	
Delaware 1,000	0.28	0.3	Delaware 7,200	0.22	0.25	
Dist. of Col 1,500	0.43	0.5	Dist. of Col 18,500	0.57	0.65	
Florida 3,500	0.99	1.4	Florida 36,500	1.13	1.15	
Georgia 4,100	1.15	1.6	Georgia 36,000	1.12	1.30	
Idaho 1,800	0.50	0.5	Idaho 13,200	0.41	0.49	
Illinois18,700	5.27	4.9	Illinois194,800	6.05	5.83	
Indiana 9,800	2.76	3.4	Indiana 95,200	2.96	3.41	
Iowa 8,900	2.51	2.0	Iowa 87,700	2.72	2.59	
Kansas 5,200	1.46	1.3	Kansas 57,700	1.79	1.68	
Kentucky 4,600	1.30	1.2	Kentucky 42,500	1.32	1.23	
Louisiana 3,500	0.99	0.9	Louisiana 33,400	1.04	0.89	
Maine 3,200	0.90	0.9	Maine 20,300	0.63	0.68	
Maryland 4,800	1.36	1.4	Maryland 37,100	1.15	1.25	
Massachusetts 12,300	3.50	3.1	Massachusetts116,300	3.62	3.45	
Michigan16,600	4.68	4.4	Michigan	6.31	5.45	
Minnesota 7,800	2.20	2.1	Minnesota 72,100	2.24	2.21	
Mississippi . 2,800	0.77	1.2	Mississippi 29,300	0.91	0.98	
Missouri10,400	2.94	3.3	Missouri 99,600	3.09	3.35	
Montana 4,400	1.24	1.0	Montana 18,800	0.58	0.61	
Nebraska 5,600	1.58	1.5	Nebraska 56,100	1.74	1.52	
Nevada 300	0.09	0.1	Nevada 2,800	0.09	0.08	
N. Hampshire 1,700	0.46	0.4	N. Hampshire 12,300	0.38	0.39	
N. Jersey14,200	4.00	4.7	N. Jersey	3.49	3.17	
N. Mexico 1,300	0.37	0.2	N. Mexico 9,200	0.29	0.22	
N. York36,300	10.23	10.7	N. York 304,800	9.47	8.82	
N. Carolina 7,200	2.11	2.3		1.83	2.18	
N. Dakota 4,600	1.30	0.9	N. Carolina 58,800	0.68	0.55	
Obio 19 000	5.33	4.6	N. Dakota 21,900		5.20	
Ohio18,900	2.39	2.4	Ohio	6.68		
Oklahoma 8,500	0.90	0.9	Oklahoma 76,800	2.38	2.42	
Oregon 3,200	7.15	7.6	Oregon 26,900	0.84	0.99	
Pennsylvania .25,400		0.7	Pennsylvania 222,600	6.91	8.15	
Rhode Island . 2,000	0.56	0.9	Rhode Island 17,900	0.56	0.54	
S. Carolina 3,100	0.87		S. Carolina24,800	0.77	0.80	
S. Dakota 3,900	1.08	0.7	S. Dakota 28,200	0.88	0.69	
Tennessee 4,000	1.11	1.1	Tennessee 43,100	1.34	1.58	
Texas20,800	5.85	4.7	Texas	5.26	4.99	
Utah 1,400	0.43	0.4	Utah	0.42	0.40	
Vermont 1,600	0.46	0.4	Vermont 10,700	0.33	0.33	
Virginia 6,200	1.73	1.9	Virginia 48,400	1.50	1.57	
Washington 4,700	1.33	1.5	Washington 39,100	1.21	1.31	
W. Virginia 3,700	1.02	0.8	W. Virginia 32,700	1.01	1.24	
Wisconsin 10,000	2.82	3.3	Wisconsin 91,400	2.84	3.10	
Wyoming 1,100	0.31	0.3	Wyoming 7,700	0.24	0.24	
Total354,500	100.00	100.0	Total3,220,000	100.00	100.00	



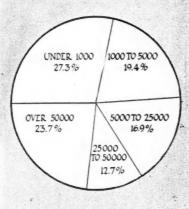


Percentage of Dealers Handling Accessories





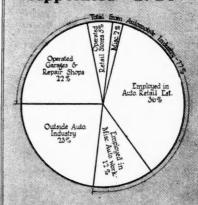
Registrations by Town Sizes



Number of Ford and Non-Ford Dealers

Ford Dealers	Non-Ford Dealers	Total Dealers
6,910	21,850	28,760
7,640	23,230	30,870
7,510	27,110	34,620
7,970	28,740	36,710
8,860	28,040	36,900
9,870	31,380	41,250
10,810	35,310	46,120
9,010	36,020	45,030
9,210	40,230	49,440
9,380	41,490	50,870
8,984	40,606	49,590
8,840	42,631	51,471
	Dealers 6,910 7,640 7,510 7,970 8,860 9,870 10,810 9,010 9,210 9,380 8,984	Dealers Dealers 6,910 21,850 7,640 23,230 7,510 27,110 7,970 28,740 8,860 28,040 9,870 31,380 10,810 35,310 9,010 36,020 9,210 40,230 9,380 41,490 8,984 40,606

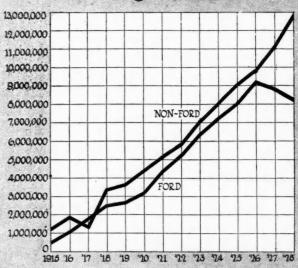
Origins of New Dealers Appointed—1928



Ford and Non-Ford Dealers by Town Sizes



Ford and Non-Ford Car Registrations





Mileage Statistics—Highways of the World (Automotive Division, Dept. of Commerce)

WORLD TOTALS	Total Mileage	Improved Mileage Includes Water- bound Macadam	Unim- proved Mileage	Sq. Mile Area to Mile of Road	No. of Autos to Road Mile	Persons Per Motor Vehicle	WORLD TOTALS	Total Mileage	Improved Mileage Includes Water- bound Macadam	Unim- proved Mileage	Sq. Mile Area to Mile of Road	No. of Autos to Road Mile	Perso Per Moto Vehic
America	3,574,731 205,902	169,169 18,701	3,405,562 187,201	4.4 48.1	7.0 1.35	9.2 493.2	ASIA Afghanistan	1,000		1,000	257	0.2	39,605
sia urope Ceania	418,457	104,816 638,570 85,962	313,641 1,337,467 320,912	248.8 5.2 8.1	0.89 20.7 1.76	2,642.3 100.4 12.8	Arabia British Malaya Ceylon	5,992 15,801	5,582 4,751	645 410 11,050	1,550 9 2	1.8 5.8 1.1	5,892. 99. 288.
Grand Total	6,582,001	1,017,218	5,564,783	7.7	4.8	59.9	China. Chosen (Korea) French Indo-China	17,746 6,000 19,377	8,074	17,336 6,000 11,303	297 14 14	0.5 0.8	18,744 6,330 1,279
AMERICA laska	1,519		1,519	388.0	1.3	28.8	India	211,068 1,559	60,340	150,728 1,553	9 92	0.5	2,900 926
gentina	19,065 2,986	424 25	18,641 2,961	61 206	14.0 0.8	37.3 1,111.2	Japan	72,817 9	31	72,786	5	1.0	881
azilitish Guiana	46,933 485	376 150	46,557 335	70 185	2.9 4.2	223.9 279.2	Macao Netherlands E. I Palestine	27,353 1,232	18,068 399	9,285 833	27	1.3 2.0	1,456
itish Honduras	65	25	40	132	2.9	255.7	Persia. Philippine Islands	6,587	1,150	5,437	95.3	1.0	1,41
ritish West Indies	10,702 424,014	3,355 6,891	7,347 417,123	1.1	1.4 2.3	117.6 9.8	Philippine Islands	6,780 654	3,453	3,327 654	17 306	11.2	1 34
nal Zone	86	86	In	cl. with	Panama		Syria Turkey (Incl. Europe)	4,998	2,242	2,756	12	1.1	380
olombia	24,846 1,064	2,222 858	22,624 206	12 466	0.8 9.7	202.7 673.2	Turkey (Incl. Europe)	18,839	310	18,529	26	0.4	1,84
osta Rica	2,175	161	2,014	11	0.7	318.6	Total Asia	418,457	104,816	313,641	249	0.89	2,64
ubaominican Republic	1,660 658	1,602 76	58 582	27 29	27.3 6.2	78.7 245.2							
uador	542	9	533	219	2.9	1,269.0							
rench Guiana	192 583	57 505	135 78	181	0.5	473.4 176.8	EUROPE Aegean Islands	217	93	124	5		
uatemala	1,367	15	1,352		1.9	770.2	Albania	310	225	85	56	1.8	1,52
aiti	931		931	11	2.2	1,117.1	Austria	21,191	20,566	625 199	2	2.4	12
exico.	380 1,528	113 255	267 1,273	122 502	37.7	1,562.4 268.7	AzoresBelgium	681 6,328	482 6,328	199	2	1.0 22.0	33
etherland W. L	173		173	2	5.2	65.0	Bulgaria	8,699	8,699		5	0.2	2,60
wfoundland	377 1,177		377	113	4.6 0.5	152.0 112.8	Cyprus	2,888 44,600	879 44,600	2,009	1	0.5	22
icaragua	260	181	1,177	92	14.2	95.9	Danzig.	503	484	19	2	5.6	13
ragua y	1,181	3	1,178		0.9	981.4	Denmark	32,053	3,957	28,096		3.3	3
eru. orto Rico	12,854 2,255		12,803 948		0.8 6.1	512.8 98.7	Estonia	13,808 28,336	168 28	13,640 28,308		0.1	57
alvador	976	44	932	14	1.9	912.6	France	440,085	24,660	415,425	0.5	2.5	3
nited States	3,005,614 5,172	149,660 548			7.8 6.7	5.1 48.3	GermanyGibraltar	128,242	25,648 15	102,594	0.1	6.8	7.
ruguayenezuela	2,796	170			4.8	225.9	Greece	6,403	1,743	4,660	7.7	2.2	41
enezuela irgin Islands	115		115	1	4.1	56.8	Hungary	30,763 1,243	8,588	22,175 1,243		0.6	47 15
Total America	3,574,731	169,169	3,405,562	4.4	7.0	9.2	Irish Free State	46,700	46,700		0.6	0.9	38
AFRICA							Italy	113,581 15,518	86,391 521	27,190 14,997	1.1	1.9	19
lgeria	12,975			65	2.4	192.2	Lithuania	27,125	751	26,374	0.8	0.1	1,72
nglo-Egyptian Sudan	225			4,508	7.8	3,976.1 2,348.3	Luxemburg	2,545 322	2,245 322	300	0.4	2.8	13
ngola elgian Congo	15,170 8,000		15,170 8,000		0.1	1,703,6	Netherlands	10,875	10,875		1,218	5.3 9.5	7
ritish East Africa	10,487	2,763	13,724	44	0.9	831.3	Northern Ireland	12,971	12,971		0.4	2.4	10
ritish Somaliland ritish West Africa	250 11,869		250 10,834		0.2	7,493.5 1,791.0	Norway	22,525 116,174	24,906	22,491 91,268	5.6	0.2	1,15
anary Islands	543	303	240	5	9.0	106.9	Portugal	10,688	8,078	2,610	3.3	2.3	25
yrenaica	1,577 3,346		1,416 3,259		7.5	674.7 563.7	Rumania	54,680 430,265	32,311 15,105	22,369 415,160		0.4	78 5,69
gyptritrea	1,085	249	836	42	0.1	3,005.9	Spain	50,000	50.000		3.1	3.9	1,12
thiopia (Abysinnia) rench Equato. Africa	4 000		4.000	000		64,102.6	Sweden. Switzerland.	80,778	575	80,203	2.1	1.8	4
ench Equato. Africa	4,900		4,900	238	0.1	20,708.4 452.1	United Kingdom	8,482 178,737	8,482 178,737		1.9	10.0	2
ench West Africa	21,375	1,429	19,946		0.3	2,251.3	Yugoslavia	27,706	12,403	15,303	3.5	0.5	88
alian Somaliland ubaland (Kenya)	932			166 3.182	0.2	5,161.3	Total Europe	1.976.037	638 570	1,337,467	5.2	20.7	10
beria	234		234	184	0.8	12,569.8		-10.01001	220,070	2,000,100	0.5		1
adagascar	2,153	1,506	647 85	112	1 5 7.4	1,740.2 286.4							
adeira	85 700	650	50	1	4.3	132.8	OCEANIA						
erecce	3,629	2,644	987	60	4.4	331.1	Australia	360,000			8.3	1.4	1
lozambiqueortuguese Guiana	15,250 1,242		15,250 1,242	28 11	0.1	2,902.4	British Pac. Is	150 199	35	115 199	116.3 35.6	1.3	1,40
eychelles	45		45	3	1.0	599.9	French Oceania	322		322	31.2	1.3	21
outh Africa Union	68,038	651	67,297	6	2.0 1.0	53.1 366.6	Guam Hawaiian Islands	1,600	1,600	66	3.2	4.5 23.5	5
outh Africa—Other panish Guiana	7,775	407	7,368		1.0		New Zealand	44,307	44,307		2.4	3.6	
ripolitania	1,008	249	759	893	0.6	1,019.1	Samoa	30		30	2.0	1.5	19
unisia	6,988	3,260	3,728	7	0.9	357.0	Samoa, Western	200		200	6.2	1.4	15
Total Africa	205,902	18,701	187,201	48	1.4	493.2	Total Oceania	406,874	85,962	320,912	8.1	1.76	1

Production

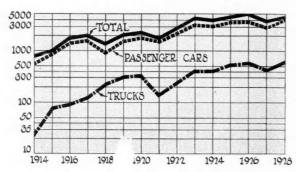


Summary of 1928 Production Totals

Passenger Cars—	
United States	3,826,613
Canada	196,737
Commercial Cars—	
United States	530,771
Canada	45,645
Buses	9,000

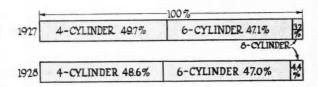
Motorcycles	 	50,000
Tractors	 	213,000
Tires	 78	,000,000
Aircraft		
Commercial	 	3,500
Military		1,000
Foreign Assemblies	 	229,000

Car and Truck Production



Production of both cars and trucks during 1929 was ahead of 1926, the best previous year. Cars were only slightly ahead while trucks increased some 10 per cent

Car Output by Cylinders



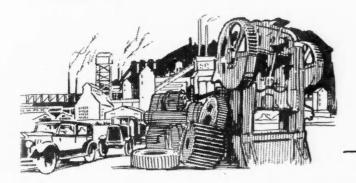
Despite the relatively large increase in the number of eight-cylinder cars on sale total output of cars of this type increases but slowly but it will increase, probably in the future

Passenger Car Production

(United States and Canada)

100	ned States an	u dunaua)
Year	Number	Value, Wholesale
1912	356,000	\$335,000,000
1913	461,500	399,902,000
1914	543,679	413,859,379
1915	895,930	565,978,950
1916	1,525,578	921,378,000
1917	1,745,792	1,053,505,781
1918	943,436	801,937,925
1919	1,657,652	1,461,785,925
1920	1,905,560	1,809,170,963
1921	1,529,165	1,095,883,000
1922	2,397,827	1,571,659,041
1923	3,780,358	2,282,953,822
1924	3,327,770	2,049,101,671
1925	3,908,304	2,555,419,483
1926	3,984,218	2,758,446,322
1927	3,092,783	2,269,056,222
1928	4,023,350*	2,643,341,000

 $^{^*}$ 3,826,613 produced in United States; 196,737 in Canada.



Number and Per Cent of Truck Production by Capacities

(United States and Canada)
(Based on N.A.C.C. Data)

(20	nocu on	14.21.0.0.	Duca				
192	1925		26	1927		1928	
Number	%	Number	%	Number	%	Number	%
3/4 ton and less	8.9	63,100	12.1	78,000	16.0	78,900	13.7
1 ton—less than $1\frac{1}{2}$	75.2	349,000	66.9	319,900	65.7	403,700	70.1
$1\frac{1}{2}$ ton—less than 2	5.6	45,900	8.8	28,700	5.9	27,800	4.8
2 ton—less than $2\frac{1}{2}$	2.2	19,300	3.7	27,700	5.7	31,100	5.4
$2\frac{1}{2}$ ton—less than $3\frac{1}{2}$ 16,600	3.2	17,700	3.4	16,600	3.4	20,400	3.5
$3\frac{1}{2}$ ton—less than 5	1.2	7,800	1.5	4,400	0.9	4,500	0.8
5 ton and over 7,800	1.5	8,900	1.7	3,900	0.8	4,100	0.7
Miscellaneous and Special 10,900	2.1	9,900	1.9	7,800	1.6	5,900	1.0
Total518,900	100.0	521,600	100.0	487,000	100.0	576,400	100.0

Ratio of U. S. Exports to Production

Per Cent Exported

Passenger Cars . 4.0 3.4 4.6 6.4 6.2 9.5 11.1 Motor Trucks . . 5.1 6.6 7.1 11.8 13.6 23.6 29.7

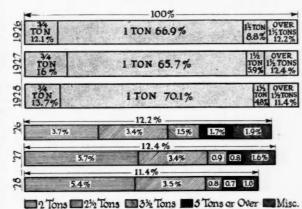
Motor Truck Production

(United States and Canada)

Year	Number	Value, Wholesale
1912	22,000	\$21,000,000
1913	23,500	44,000,000
1914	25,375	45,098,464
1915	74,000	125,800,000
1916	92,130	161,000,000
1917	128,157	220,982,668
1918	227,250	434,168,992
1919	275,943	423,326,621
1920	321,789	423,249,410
1921	153,200	165,783,550
1922	248,402	221,453,667
1923	400,092	309,079,606
1924	410,016	318,311,344
1925	518,915	459,744,079
1926	521,643	456,371,169
1927	486,970	431,649,521
1928	576,416*	415,320,000

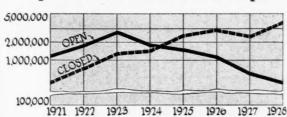
*530,771 produced in United States, 45,645 in Canada.

Truck Output by Capacities



Little change is evidenced in the distribution of truck production except that large trucks appear to be more than holding their own

Open and Closed Car Output



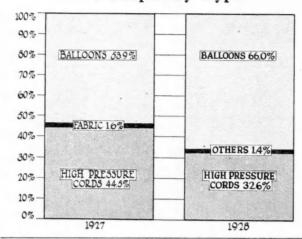
Closed car production continues its upward trend after its set-back in 1927 while that of open cars declines still further



Production



Tire Output by Types



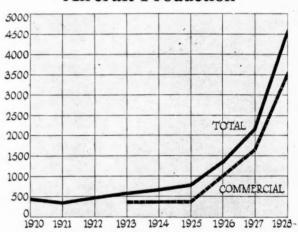
World Motor Vehicle Production

(Automotive	Division, Domesto		au of	Foreig	n and	
	1924	1925	1926	1927	1928	
Austria		4,900	5,290	8,700	11,500	
Belgium	4,500	5,639	6,000	6,500	9,000	
Czechoslovaki	a	5,000	7,000	10,200	15,360	
Denmark		75	200	190	200	
England	132,000	176,800	198,699	231,920	232,200	
	145,000	177,000	190,000	190,000	200,000	
Germany		55,000	54,500	72,000	150,200	
**		398	388	282	860	
	35,000	39,573	64,760	54.559	47,000	
Spain		473	1.050	585	675	
Sweden		270	410	1.250	2,000	
Switzerland		450	1.046	1,585	1,600	
Japan			-,	305	250	
Russia				510	2,130	
Total	334,500	460,678	529,343	578,586	672,975	

Open and Closed Car Production

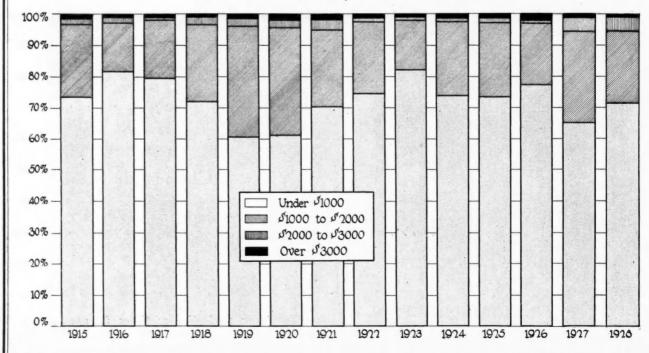
Year	Open	Closed	% Closed
1919	1,497,000	161,000	10.3
1920	1,582,000	324,000	17.0
1921	1,191,000	338,000	22.1
1922	1,679,000	719,000	30.0
1923	2,528,000	1,252,000	34.0
1924	1,896,000	1,432,000	43.0
1925	1,699,000	2,209,000	56.5
1926	1,117,000	2,867,000	72.0
1927	566,000	2,527,000	81.7
1928	579,000	3,444,000	85.6

Aircraft Production



1928 aircraft production was nearly double that of 1927, according to Department of Commerce estimates. Of the increase practically all was in commercial type planes

Car Production by Price Classes



Production



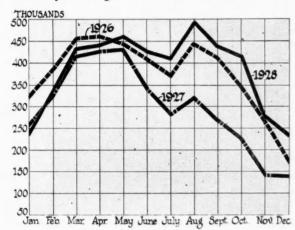


Foreign Assembly Sales

	No. of Foreign Assembly	U. S. Foreign Assembly
Year	Plants	Sales
1921	13	19,296
1922		45,444
1923	7	75,985
1924	10	116,148
1925	17	152,262
1926	26	145,774
1927	33	192,981
1928	40	229,000

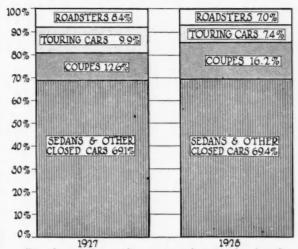
Sales figures include shipments of cars and trucks assembled from parts exported from the United States or Canada without regard as to whether or not they have been declared on export as complete vehicles

Monthly Output of Cars and Trucks



May production last year went ahead of 1926 and every month thereafter 1928 production was well in advance of that during the previous record year

Car Output by Models



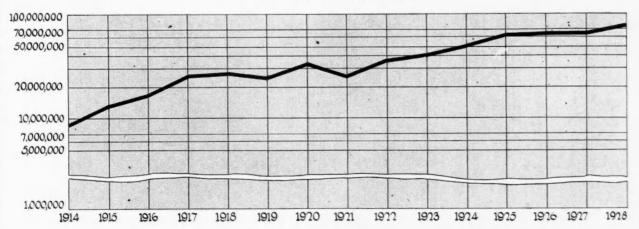
Complete information concerning production by models is rather hard to obtain but the above data are, we believe, rather accurate indications of the present trend

Production of Closed Cars

(Percentage of Closed Cars to Total Production in Each Price Class)

Year	Under \$1,00	\$1,000-\$2,000	\$2,000-\$3,000	Over \$3,000
1919	9.0	8.0	24.0	30.5
1920	19.1	12.0	22.0	22.3
1921	21.5	18.5	36.8	44.0
1922	24.3	39.6	80.4	78.7
1923	32.4	35.8	82.8	90.3
1924	32.3	71.6	77.7	91.4
1925	49.8	73.8	80.0	82.5
1926	68.0	84.5	84.4	75.0
1927	84.0	77.7	78.3	81.7
1928	78.9	92.8	95.5	87.4

Total Tire Production



Total tire production continues to increase not only because of the greater number of cars making up the domestic market but also because of the very rapidly expanding export market for American tires. The fact that production appears to be increasing at a slower rate than these conditions would appear to warrant is evidence of the greater service which is being provided by the modern products of the tire makers





Number and Percentage of Passenger Car Production by Price Classes

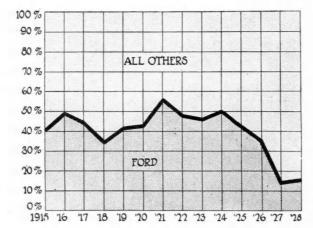
	Under	\$1,000	\$1,000-\$	2,000	\$2,000-	\$3,000	Over \$3	,000
Year	No.	%	No.	%	No.	%	No.	%
1912	 156,000	43.8	169,800	47.7	10,300	2.9	19,900	5.6
1913	 289,400	62.7	131,500	28.5	23,100	5.0	17,500	3.8
1914	 339,800	62.5	160,400	29.5	29,900	5.5	13,600	2.5
1915	591,900	72.3	199,700	24.4	18,000	2.2	9,000	1.1
1916	 1,240,300	81.3	236,500	15.5	36,600	2.4	12,200	0.8
1917	 1,389,200	79.8	304,600	17.5	26,100	1.5	20,900	1.2
1918	 663,300	71.6	224,200	24.2	31,500	3.4	7.400	0.8
1919	 050 400	58.9	578,500	34.9	69,600	4.2	33,200	2.0
1920	 1,118,600	59.4	619,600	32.9	81,000	4.3	64,000	3.4
1921	 1,044,700	69.0	352,800	23.3	81,700	5.4	34,800	2.3
1922	 1,774,400	74.0	522,700	21.8	59,900	2.5	40,800	1.7
1923	 3,068,300	81.6	617,300	16.4	45,200	1.2	30,200	0.8
1924	 2,434,800	73.3	800,200	24.1	42,900	1.3	42,900	1.3
1925	 2,853,700	73.2	913,600	23.4	70,300	1.8	62,400	1.6
1926	 3,059,500	77.0	778,500	19.6	63,600	1.6	71,600	1.8
1927	 2,005,700	65.0	907,200	29.4	138,900	4.5	33,900	1.1
1928	 2,932,800	72.9	918,100	22.8	133,300	3.3	39,200	1.0

World Car and Truck Production Where Segregated

(Automotive Division, Bureau of Foreign and Domestic Commerce)

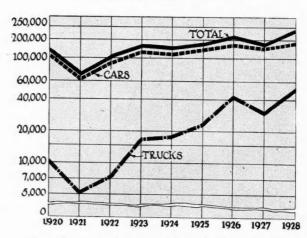
	1926		19	27		1928 (Estimated)			
Car	s Trucks	Total	Cars	Trucks	Total	Cars	Trucks	Total	
Austria 3,90	30 1,330	5,290	6,100	2,600	8,700	8,100	3,400	11,500	
Belgium 5,00	00 1,000	6,000	5,500	1,000	6,500	7,600	1,400	9,000	
Czechoslovakia		7,000	8,350	1,850	10,200	12,600	2,800	15,400	
Denmark		200	40	150	190	50	150	200	
England 158,69	9 40,000	198,699	161,920	70,000	231,920	179,200	53,000	232,200	
Germany 37,00	0 17,500	54,500	60,000	12,000	72,000	108,000	42,200	150,200	
	30 208	388	167	115	282	500	400	900	
Italy		64,760	51,473	3,086	54,559	44,400	2,600	47,000	
Spain 60	00 450	1,050	275	310	585	300	400	700	
Sweden	10 400	410	800	450	1,250	1,300	700	2,000	
Switzerland 19	96 850	1,046	245	1,340	1,585	300	1,300	1,600	
Japan			80	225	305	100	200	300	
Russia				510	510		2,100	2,100	

Ratio of Ford Output to Total

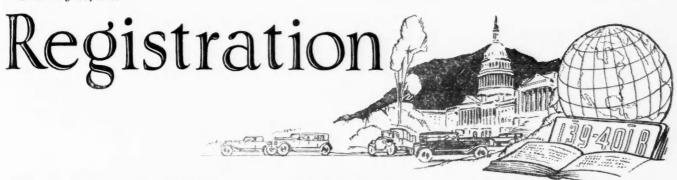


During 1928 Ford halted the downward trend of his output in proportion to total production which has been active since 1924

Canadian Production



Canadian production followed that in the United States to a record year with trucks making the largest proportionate increase



Summary Table of World Registrations of Motor Vehicles

Total Cars, Trucks and Buses	Cars	Trucks	Buses	Motorcycles
Americas (Except U.S.) 1,793,620	1,490,345	298,554	4,721	16,541
United States 24,501,004	21,316,657	3,092,059	92,288	117,165
Europe 4,193,520	3,050,840	1,030,889	111,791	1,851,550
Oceania	577,852	130,709		126,609
Asia 415,205	318,077	89,696	7,432	52,781
Africa 279,237	228,913	48,278	2,046	58,368
Total31,891,147	26,982,684	4,690,185	218,278	2,223,014

A	11	11	Ca

					Motor-
Country	Total	Cars	Trucks	Buses	cycles
Abyssinia	298	251	47		
Algeria	39,444	32,828	6,616		3,000
Angola	1,625	800	825		
Belgian Congo	3,750	2,000	1,750		****
Brit. East Africa	12,700	8,250	4,450		4,250
Brit. West Africa	13,000	4,500	8,500		2,500
Canary Islands	4,933	3,409	1,524		136
Egypt	26,530	21,905	3,429	1,196	3,365
French West Africa	4,000	4,000			500
Liberia	225	225			
Madagascar	1,585	1,200	385		770
Madeira	510	510			40
Mauritius	3,183	2,600	583		250
Morocco	16,688	12,165	4,523		1,802
Port. East Africa	1,100	800	300		300
Reunion	905	775	130		130
Rhodesia	9,060	7,800	1,260		2,750
Seychelles	14	14			
Somaliland and					
Eritrea	550	399	151		75
South Africa 1	25,850	114,000	11,000	850	37,500
Southwest Africa	1,500	1,200	300		80
Spanish Morocco.	600	600			
Sudan	2,152	1,052	1,100		****
Tangier	475	300	175		30
Tripolitania	510	260	250		
Tunisia	8,050	7,070	980	****	890
Total, 1929	279,237	228,913	48,278	2,046	58,368

The data upon which these tables have been based and which make them a very accurate approximation of motor vehicle registrations throughout the world have been obtained through the wholehearted cooperation of a great number of individuals and agencies. While proper acknowledgment of our debt cannot be made here to all we wish especially to thank The American Automobile (Overseas Edition); the Bureau of Foreign and Domestic Commerce and its representatives, and, particularly, the Automotive Division of the Bureau; American consuls and consular officers in many cities; factory representatives abroad, motor trade associations and automobile clubs and many other governmental, municipal and private individuals and organizations.

North and South America

Country	Total	Cars	Trucks	Buses	cycles
Alaska	2,300	2,300			
Argentina .	299,839	246,064	53,775		2,592
Bahamas	1,050	800	250		20
Barbados			100		
	1,450	1,350		****	****
Bermuda	20	1 100	19	****	350
Bolivia	2,335	1,400	850	85	350
Brazil	155,000	102,500	52,500	****	1,500
British					
Guiana	1,860	1,600	260		287
British					
Honduras	150	110	40		15
Canada	1,061,828	930,403	129,807	1,618	7,903
Chile	23,500	16,000	7,500		350
Colombia			5,500		000
Colombia	15,000	9,500	5,500	444	0.0
Costa Rica.	2,079	1,563	405	111	90
Cuba	45,604	31,158	12,668	1,778	364
Dominican					
Republic.	4,346	3,846	500		
Dutch					
Guiana	300	175	125		85
Dutch West	000	210	220		
Indies	1,300	1,300			
Foundam			530	80	AC
Ecuador	1,930	1,320	990	80	46
French	0.0	40	0.0		
Guiana	92	60	32	****	8
Grenada	397	308	40	49	60
Guadeloupe.	650	650			
Guatemala.	2,403	2,154	249		20
Haiti	2,568	2,293	275		30
Honduras .	500	500			
Jamaica	6,750	5,000	1,750		550
Martinique.	1,500	1,500			
Martinique.			10,000	****	****
Mexico	62,500	52,500	10,000		
Newfound-	0.000	4	0.11		-
land	2,023	1,770	244	9	71
Nicaragua.	682	600	80	2	100
Other					
British					
W. Indies	1,000	1,000			
Panama	6,915	6,915			375
Porognos:	1,500	604	896		3
Paraguay .					150
Peru	11,900	6,700	5,200	****	
Porto Rico.	13,039	10,440	2,599	4.4.4	144
Salvador	1,866	1,520	245	101	110
St.Pierre and					
Miquelon.	64	31	33		
Trinidad and					
Tobago	6,480	4,245	1,974	261	895
United	-,	-1	-,		
States	24.501.004	21,316,657	3,092,059	92,288	117,165
Virgin	21,001,001	21,010,001	0,002,000	02,200	111,100
	559	4.47	100	4	111
Islands	94 501	447	108	623	
Uruguay	34,591	28,618	5,350		312
Venezuela.	15,750	11,100	4,650		
Total, 1929	26,294,624	22,807,002	3,390,613	97,009	133,706
Total, 1929,					
less U. S.	1,793,620	1,490,345	298,554	4,721	16,541
1000 0. 0.	-,100,020	-1100,010	,	-,	,

Registrations



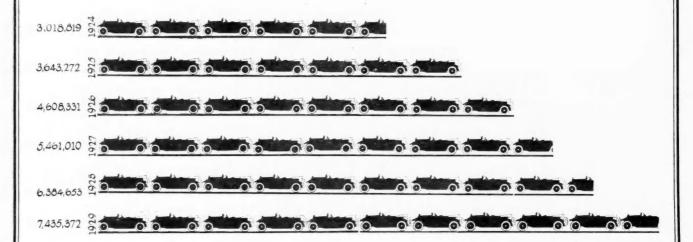


		Europ	e		
				_	Motor-
Country	Total	Cars	Trucks	Buses	cycles
Albania	560	445	115	* * * *	****
Austria	28,230	17,000	11,230	****	35,380
Azores	722	680	14	28	24
Belgium	108,225	108,225			40,000
Bulgaria	2,567	1,615	952		
Czechoslovakia Danzig Free	45,403	31,617	12,328	1,458	26,830
	0.011	1,450	721	70	1,123
State	2,241			-	
Denmark	88,898	62,623	25,250	1,025	21,554
Esthonia	1,860	1,259	439	162	359
Faroe Islands.	39	15	22	2	
Finland	32,438	22,420	10,018	****	5,670
France	1,108,900	785,200	323,700	* * * *	250,000
Germany	519,100	387,700	131,400		491,000
Gibraltar	582	369	213		63
Great Britain.	1,372,109	946,210	320,537	105,362	715,48
Greece	18,700	12,620	6,080		1,25
Holland	85,500	57,200	28,300		30,59
Hungary	16,200	12,000	4,200		8,50
Iceland	765	300	460	5	7
Irish Free					
State	45,319	38,823	6,496		7,85
Italy	172,000	137,000	35,000		80,00
Latvia	2,300	1,400	700	200	75
Lithuania	1,393	1.048	219	126	40
Luxemburg	7,775	5,775	2,000		1,23
Malta	2,430	2,100	150	180	35
North. Ireland	21,617	16,073	5,544		6.09
Norway	36,027	24,554	10,100	1,373	6,31
Poland	27,000	20,500	6,500		4,00
Portugal	25,621	17,624	7,997		1,50
Rumania	29,200	22,000	5,700	1,500	99
Spain	156,501	129,920	26,581		35,00
Sweden	126,898	93,575	33,323		45,27
Switzerland	60,600	48,000	12,600		39,50
U. S. S. Russia	35,000	35,000			
			9.000	200	12,00
Yugoslavia	10,800	8,500	2,000	300	2,400
Total, 1929	4,193,520	3,050,840	1,030,889	111,791	1,851,55

	A	sia				
Country	Total	Cars	Trucks	Buses	Motor- cycles	
Afghanistan	200	100	100			
Arabia	1,809	1,476	77	256	146	
British Malaya	30,896	25,620	5,276		891	
Brit. North Borneo	70	55	15		10	
Ceylon	17,139	12,516	2,316	2,307	3,180	
China	23,130	17,551	5,579		1,200	
Cyprus	1,797	1,447	350			
French Indo-China	15,340	12,000	3,340			
Hong Kong	1,876	1,452	291	133	476	
India	131,500	108,000	23,500		25,000	
Iraq	3,131	2,468	663		250	
Japanese Empire.	72,888	46,433	26,455		17,500	
Netherlands East						
Indies	55,883	40,726	9,157		2,093	
Palestine	2,976	2,066	910		291	
Persia	7,860	4,460	3,400		500	
Philippine Islands	26,796	19,089	5,051	2,656	581	
Siam	6,850	4,000	1,700	1,150	625	
Syria	6,190	5,550	510	130	38	
Turkestan and						
Transcaucasia	74	68	6			
Turkey	8,800	7,000	1,000	800		
Total, 1929	415,205	318,077	89,696	7,432	52,781	

Oc	eani	a			
Country Australia	Total	Cars 419,418	Trucks 96,433	Motor- cycles 90,000	
Fiji Islands		725	175	100	
French Oceania		375	60	55	
Hawaii	39,665	31,488	8,177	315	
New Zealand	151,454	125,690	25,764	36,130	
Western Samoa	256	156	100	9	
Total, 1929	708,561	577,852	130,709	126,609	

Growth of Registrations Outside the U.S.





United States Registrations



Registrations Gain 5.4 Per Cent

Motor vehicles in operation on December 31 total 24,501,004. Trucks over 3,000,000 mark.

TOTAL passenger car, truck and bus registrations in the United States as of Dec. 31, 1928, were 24,501,004 according to a survey just completed by Automotive Industries. Cars in use represent 21,316,657; trucks, 3,092,059, and buses—in the 24 states where they are segregated from cars or trucks—92,288. This last figure includes taxicabs also in the States of New York and Tennessee, so that it is not a true picture of bus registrations.

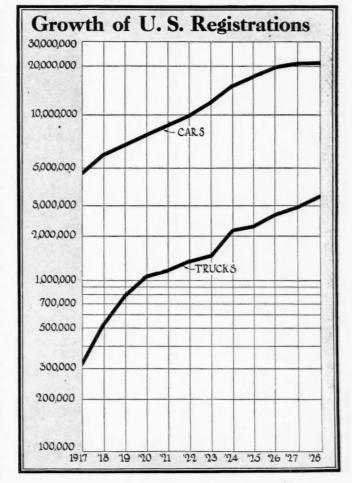
Motorcycle registrations were 117,165 while total fees collected for licenses totaled \$317,493,790 and gasoline taxes in 46 states amounted to \$293,318,928.

For the first time in history a state has registered more than 2,000,000 motor vehicles, as New York bettered this mark during 1928 by almost 100,000 vehicles. There are again seven states in which more than 1,000,000 vehicles are registered while there are but seven in which less than 100,000 vehicles are in operation.

The gain in registrations over 1927 was about 1,247-000 vehicles, which, in consideration of the fact that total motor vehicle sales during the year were approximately 3,574,000, indicates the very great importance of the replacement market in present-day sales plans. Considerably over half of the vehicles sold during the year apparently were used to replace other vehicles scrapped or otherwise taken out of active service.

The percentage gain over 1927 registrations was 5.4 per cent, only one-tenth of 1 per cent less than that made during 1927. Under ordinary conditions, the percentage increase each year should decline as the number of cars in use increases, but the very great improvement in 1928 sales over those of 1927 served to make the loss last year almost negligible.

Once again it is well to emphasize the facts regarding the accuracy of the registrations data presented here. As has often been pointed out in these pages, it is absolutely impossible for any agency, no matter how



U. S. Registration Summary

careful and efficient, to present an entirely accurate registration summary. And it will continue to be impossible to do so until about a dozen states change their methods of handling registrations so that duplications in their figures can be avoided.

Automotive Industries has gone as far as is possible in the elimination of these duplications which appear in the published registration data of about half the states. The figures presented here have been subjected to corrections for 17 errors which we knew to be present in the data as it came to us, but we also know of at least 14 other errors which still remain in the data as published and which are impossible to remove until various state administrative methods are changed.

How large these unknown duplications are and how much they might affect the totals published here is uncertain. That they might have considerable influence is evidenced by the fact that this year registrations in Colorado and Maryland show a decrease from

(Continued on page 283)



United States

,		Moto	r Veh	icle F	Registi	ation	s, 1910	6 to 19	928			
1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928
1916 Alabama	1917 32,873 19,890 28,693 306,916 66,850 85,724 10,700 15,493 27,000 70,357 24,768 340,292 192,192 254,317 159,343 47,416 28,394 41,499 60,943 174,274 226,693 54,009 36,600 147,528 42,696 148,101 7,160 22,267 134,964 8,457 155,950 62,993 346,772 100,199 48,632 325,153 346,772 100,199 48,632 325,153 346,772 100,199 48,632 325,153 346,772 100,199 48,632 325,153 346,772 100,199 48,632 325,153 346,772 100,199 48,632 325,153 346,772 100,199 48,632 325,153 346,772 100,199 48,632 325,153 346,772 100,199 48,632 325,153 31,300 213,334 44,076 20,369 55,000 91,337 31,300	1918 46,171 23,905 41,458 364,800 83,244 92,605 12,955 30,490 54,186 99,800 227,160 227,160 227,313 189,163 65,870 40,000 40,372 74,666 193,497 74,666 193,497 71,50,409 81,159 15,509 11,037 175,409 81,159 11,037 175,409 81,159 11,037 175,409 81,159 11,037 171,627 412,775 121,500 63,324 394,186 64,218 55,492 90,521	1919 58,898 28,979 49,450 477,450 1104,865 116,152 35,400 127,326 478,438 277,255 363,857 227,752 90,641 51,000 53,425 95,634 247,183 325,813 259,743 325,813 259,743 18,077 571,662 1199,017 82,885 511,031 144,500 83,325 192,000 9305 192,000 9305 194,373 18,077 571,662 109,017 44,833 70,143 104,628 88,422 331,310 44,833 70,143 104,628 88,422 331,310 246,897 50,203 236,981	1920 74,637 34,559 59,082 127,549 119,143 18,300 39,712 73,914 144,422 50,873 568,759 332,707 437,300 62,907 116,341 304,631 412,713 60,646 223,000 10,464 34,646 223,000 10,464 34,646 223,000 10,464 34,646 223,000 10,464 34,671 20,4860 90,840 10,464 34,671 20,4860 90,840 10,464 34,671 20,4860 90,840 10,464 34,676 91,852 427,693 42,578 120,395 101,352 121,395 101,352 121,395 101,352 121,395 101,352 121,395 121,3	1921 82,343 35,049 67,446 673,830 145,739 137,526 21,413 61,745 97,837 131,942 460,528 291,309 77,527 140,572 360,732 347,7037 328,700 65,139 346,437 58,785 10,819 272,994 24,703 3812,031 148,684 92,644 720,632 221,300 118,325 689,589 90,546 119,274 117,025 467,616 141,000 185,359 93,894 94,484	1922 90,052 38,034 86,425 861,805 162,328 154,560 85,425 115,891 145,584 53,874 786,190 469,939 500,148 327,194 154,284 92,539 165,624 385,231 578,969 62,649 256,654 12,647 48,293 341,626 254,733 1,002,284 249,659 134,296 125,473 1,002,284 249,659 134,284 259,737 66,466 95,978 125,238 49,156 43,881 169,000 210,957	1923 126,642 48,741 111,946 1,100,283 189,356 177,931 29,977 103,171 160,000 173,794 62,379 969,331 353,342 576,398 375,594 198,347 138,500 108,609 209,938 566,1500 730,658 448,187 73,828 286,053 15,700 476,373 73,828 286,053 15,700 173,658 448,187 124,668,700 159,571 1430,958 31,737 1,214,642 247,612	1924 157,262 57,828 141,983 1,321,480 213,247 214,318 80,720 194,196 209,300 69,225 1,123,724 650,219 620,906 410,891 1231,784 178,000 127,178 195,581 572,315 572,315 572,315 771,929 504,190 41,750 1,412,879 308,713 18,387 71,929 504,190 342,982 142,280 192,629 1,228,586 90,652 163,382 142,280 204,680 834,040 69,227 61,179 261,643 294,812 190,134 525,221	1925 194,580 68,029 183,764 1,439,463 240,097 248,474 40,681 93,612 260,720 244,871 81,484 1,263,177 725,410 657,567 457,033 260,754 207,000 140,134 230,684 654,338 990,709 569,694 177,262 602,900 94,656 602,900 94,656 61,338,718 21,185 81,250 579,886 1,185	1926 225,651 73,574 209,419 1,600,475 260,911 44,418 129,792 416,930 274,037 295,861 1,370,503 491,276 689,036 491,276 689,593 1,118,70,503 1,118,70,503 249,056 689,593 1,118,15,437 215,500 130,946 367,838 24,014 89,001 1,500 150,891 1,1815,431 1,815,431 1,815,432 1,510,000 234,134 1,463,261 1,001 249,056 680,891 1,1815,437 385,763 1,1815,432 1,510,000 234,134 1,463,261 1,001 249,056 1,007 249,058 1,007 249,058 1,007 259,038 1,047,202 81,633 73,871 320,367 367,093 221,001	1927 243,539 74,527 206,568,026 282,892 46,707 126,136 391,168 296,567 706,829 501,901 1,438,985 813,496 706,829 501,901 1,156,344 640,102 227,103 678,564 112,756 373,912 25,851 96,000 1,900,866 422,544 160,696 1,570,418 1,568,617 1,19,335 1,19,335 1,19,592 295,530 1,110,986 78,976 335,275 389,409 241,042	1928 255,850 91,800 214,960 1,727,024 245,260 315,234 51,210 150,915 358,663 318,180 1,504,359 843,092 778,666 556,262 277,000 166,621 224,849 757,720 1,248,080 668,155 225,826 714,437 127,442 27,134 102,750 173,944 102,750 173,944 10,662,000 173,944 1,662,000 173
Wisconsin 115,637 Wyoming 7,125	12,523	16,200	21,371	293,298 23,926	26,619	$388,044 \\ 30,637$	39,831	43,639	47,712	662,328 $49,633$	$698,944 \\ 52,222$	743,815 $56,867$
Totals 3,584,567	4,970,671	6,105,588	7,596,503	9,206,141	10,505,630	12,299,770	15,312,658	17,605,495	19,857,915	22,046,957	23,253,882	24,501,004

Total Registrations, Gains and Persons Per Motor Vehicle

State	Total Registra- tions	Gains Jan. to Jan. 1, Numer- ical		Persons Per Motor Vehicle	State	Total Registra- tions	Gains Jan. to Jan. 1, Numer- ical		Persons Per Motor Vehicle
New York	2,093,792	192,926	10.2	5.5	Alabama	255,850	12,311	5.1	10.0
California	1,727,024	27,069	1.6	2.6	Oregon	254,415	7,792	3.2	3.5
Ohio	1,662,000	91,582	5.8	4.1	West Virginia	251,419	10,377	4.3	6.9
Pennsylvania	1,642,866	74,249	4.7	6.0	Colorado		12,766*	4.8*	4.5
Illinois	1,504,359	65,374	4.5	4.9	Mississippi	235,826	8,723	3.8	7.9
Michigan	1,248,080	91,736	8.0	3.7	Maryland	234,849	49,418*	17.4*	6.9
Texas	1,213,224	102,238	9.2	4.5	South Carolina	216,964	17,170	8.6	8.6
Indiana	843,092	29,596	3.6	3.8	Arkansas	214,960	8,392	4.1	9.1
Massachusetts	757,720	61,613	8.9	5.7	South Dakota		21,308	12.5	3.7
New Jersey	754,841	42,439	6.0	5.1	North Dakota		13,248	8.3	3.7
Wisconsin	743,815	44,871	6.4	4.0	Maine	166,621	2,371	1.4	4.8
Iowa	736,666	29,837	4.2	3.3	Dist. of Col		24,779	19.7	3.6
Missouri	714,437	35,873	5.3	4.9	Montana		14,686	13.0	4.3
Minnesota	668,155	28,053	4.4	4.1	Rhode Island		7,583	6.9	5.7
Oklahoma	585,346	59,104*	9.2*	4.1	Idaho		5,931	5.8	5.0
Kansas		34,361	6.9	3.4	New Hampshire .	102,750	6,750	7.0	4.4
North Carolina	486,000	63,456	15.0	6.0	Utah	98,541	19,565	24.8	5.4
Washington	408,156	18,747	4.8	3.9	Arizona		17,273	23.2	5.2
Nebraska	375,972	2,060	0.6	3.7	Vermont		6,721	8.5	4.1
Virginia		23,358	7.0	7.2	New Mexico		7,643	12.7	5.9
Florida	358,063	33,105*	8.4*	4.0	Wyoming	56,867	4,645	8.9	4.3
Tennessee	325,406	29,876	10.1	7.7	Delaware		4,503	9.6	4.8
Georgia	318,180	21,613	7.3	10.0	Nevada	27,134	1,283	5.0	2.8
Connecticut	315,234	32,342	11.5	5.3				_	
Kentucky	305,291	20,192	7.1	8.4	U. S. Total2	24,501,004	1,247,122	5.4	4.9
Louisiana	277,000	22,000	8.6	7.1	(*Loss)				

Registrations

1,004

(Continued from page 281)

1927 but in both cases this is a statistical decrease solely and has been brought about by the possibility of eliminating duplications in 1928 data which could not be removed from those of previous years.

Motor vehicle registrations are still increasing faster than population, as is shown by the fact that while the number of persons per vehicle declined from 5.1 in 1927 to 4.9 in 1928, only two states have 10 persons for vehicle while in 23 states the car-per-family ratio of 4.5 persons per car has been equaled or exceeded.



Rather astonishing gains in registrations were made in the two Mountain States of Utah and Arizona and equal gains during 1929 will place both states in the 100,000 class. The Southern States, as a group, have relinquished their former position of being the most rapidly expanding automotive markets, although North and South Carolina and Tennessee showed large proportionate gains during 1928. New York's gain of over 10 per cent was rather unusual in a state which already is so well supplied with motor vehicles, while Connecticut and the District of Columbia were also among those where sales were relatively large.

Motor Vehicle Registration Statistics

43-1	Cars	Trucks	Buses	Total	Cycles	License Fees	Gas Tax
Alabama	222,925	32,567	358	255,850	611	\$3,494,243	\$6,431,304
Arizona	83,893	7,710	197	91,800	317	450,000	2,050,799
Arkansas	181,334	36,626	*	214,960	515	4,000,000	4,308,952
California	1,530,134	196,890		1,727,024	9,445	8,176,500	29,566,769
Colorado		19,854	958	245,260	1,234	1,790,183	4,098,507
Connecticut	266,442	48,029	763	315,234	3,574	5,729,022	3,350,000
Delaware	41,195	10,015	†	51,210	345	928,916	823,667
Dist. of Columbia.	134,864	16,051		150,915	1,093	168,000	1,200,000
Florida	297,882	60,181	‡	358,063	1,360	4,888,567	11,284,180
Georgia	277,881	40,299	‡	318,180	1,078	4,041,787	8,250,000
Idaho		11,657		108,931	400	1,657,310	2,000,000
Illinois		190,356	1 010	1,504,359	5,826	15,521,530	None
Indiana		119,419	1,019	843,092	3,124	5,692,470	11,404,340
Iowa		61,019	‡	736,666	1,726	10,692,767	9,138,708
Kansas		61,902	*	536,262	1,199	5,376,930	5,375,000
Kentucky		31,787	*	305,291	742	4,592,997	6,300,000
Louisiana		40,000	*	277,000	725	4,341,263	3,281,029
Maine		28,212		166,621	910	2,720,650	3,250,000
Maryland		8,038	721	234,849	2,165	3,052,608	5,725,953
Massachusetts		89,228	1,711	757,720	6,600	13,420,453	None
Michigan		165,367	*	1,248,080	3,400	18,150,000	14,250,000
Minnesota		89,026	359	668,155	2,083	10,134,376	5,390,000
Mississippi	204,694	31,132	*	235,826	80	353,000	4,850,000
Missouri	638,189	76,248	*	714,437	1,811	8,600,000	6,180,000
Montana		21,969	*	127,442	193	1,298,828	967,000
Nebraska		28,069	157	375,972	860	3,752,591	3,987,058
Nevada		5,549	*	27,134	92	25,000	524,481
New Hampshire		14,048	*	102,750	1,299	1,936,272	1,495,741
New Jersey		127,191	10,317	754,841	6,628	15,538,688	8,324,806
New Mexico		2,463	*	67,643	160	576,000	676,000
New York	1,705,702	333,755	54,335§	2,093,792	15,825	34,808,231	None
North Carolina		44,000	*	486,000	925	8,180,360	9,787,011
North Dakota	152,197	21,747	‡	173,944	236	1,775,145	1,810,000
Ohio		202,000	†	1,662,000	7,500	11.807,209	25,000,000
Oklahoma		57,783	1,000	585,346	1,000	6,268,918	4,750,000
Oregon		21,952	975	254,415	2,012	6,969,221	4,120,000
Pennsylvania		221,083	8,288	1,642,866	13,535	27,113,777	21,000,000
Rhode Island		19,904	376	126,918	1,166	2,204,078	1,188,500
South Carolina		22,538	159	216,964	432	2,440,539	5,496,912
South Dakota		20,393	92	191,900	231	2,901,668	3,100,000
Tennessee		27,832	2,199§	325,406	1,059	4,064,906	5,000,000
Texas		153,196	5,783	1,213,224	3,481	17,521,050	19,211,092
Utah		14,321	*	98,541	520	731,340	1,918,131
Vermont		7,546	111	86,231	520	2,090,516	1,077,426
Virginia		54,000	633	358,633	1,900	5,500,000	9,065,000
Washington		59,379	556	408,156	2,737	6,526,010	4,174,558
West Virginia		35,612	674	251,419	1,479	4,142,595	4,302,103
Wisconsin		96,516	547	743,815	2,866	10,774,706	7,018,902
Wyoming	49,267	7,600	~	56,867	134	572,570	815,000
Total		3,092,059	92,288	24,501,004	117,165	\$317,493,790	\$293,318,928
# 3T-1	1			+ Included -	with magazana	MAN AAMA	

^{*} Not segregated.

[†] Included with trucks.

[‡] Included with passenger cars.

[§] Includes taxis.

70 9

60%

50%

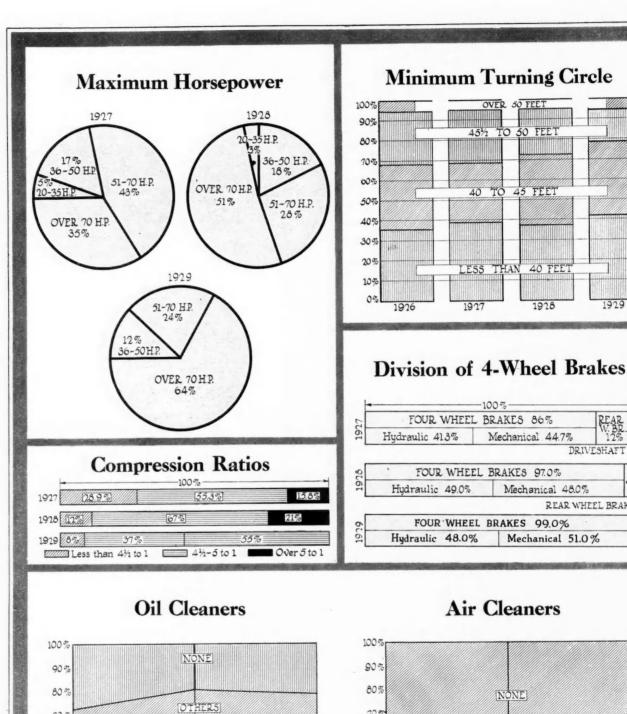
40%

30%

20%

10%

Current Trends in



FILTERS

451/2

LESS THA

100%-

Mechanical 44.7%

Mechanical 48.0%

Mechanical 51.0%

1927

40 TO 45 FEET

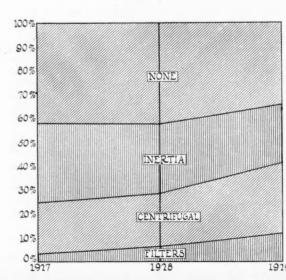
40 FEE

1928

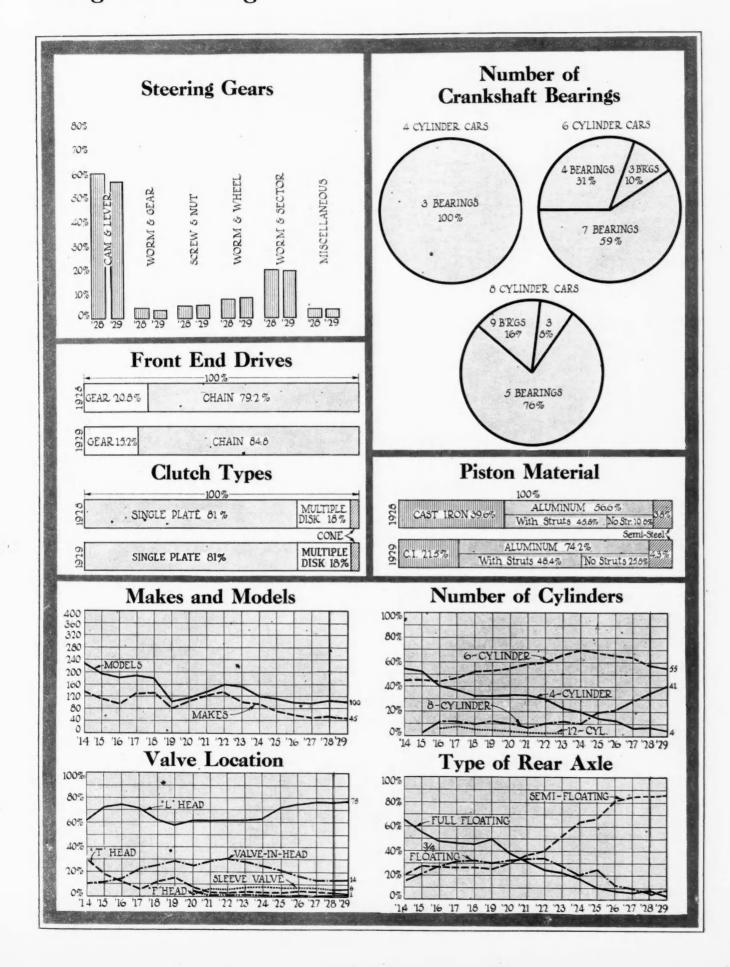
1929

DRIVESHAFT 2%

REAR WHEEL BRAKES



Passenger Car Design





Specifi

American Passenger

	GE	NER	AL		CLUTCH							SET			REAR AXLE							
MAKE AND MODEL	Wheelbase (In.)	Chassis Weight (Lbs.)	Tire Size	Make and Model	Туре	Number of Driving and Driven Disks	Maximum Dia.(In.)	Minimum Dia.(In.)	Number	Make		Number of Forward Speeds	Low Gear Ratio	Universals Type and Make	Make	Туре	Final Drive	Gear Ratio	Propulsion Taken By	Torque Taken By	Minimum Road Clearance (In.)	Differential Make
Auburn. 6-80 Auburn. 8-90 Auburn. 120	120 125 129		30x6.00	Long8F Long9C Long28A	SP	1-2 1 1-2	83/4	61/4	2 2 4	W-G W-G W-G	Eng	3 3 3	3.11	m-Det m-Det m-Det	Col Col	½F ½F ½F	SB SB	4.9° 4.7° 4.5°	Spr Spr	Spr Spr	81/2	Col Col
Blackhawk L6 Blackhawk L8 Buick 116 Buick 121 & 129	$127\frac{1}{2}$ $127\frac{1}{2}$ $115\frac{3}{4}$ $120\frac{3}{4} - 128\frac{3}{4}$		31x6.00 30x5.50	B&B. 11Q B&B. 11Q Own Own	SP MD	1-1 1-1 6-5 6-5	$10\frac{7}{8}$ $10\frac{7}{8}$ $7\frac{3}{4}$ $7\frac{3}{4}$	$6\frac{3}{4}$ $6\frac{3}{4}$ $5\frac{3}{4}$ $5\frac{3}{4}$	10	Own	Eng Eng Eng Eng	4 4 3 3	3.49	m-UP m-UP m-Own m-Own	Sal Sal Own Own	1/2F 1/2F 3/4F 3/4F	Wo SB SB	4.75	Spr Spr TT	Spr Spr TT TT	8 16 8 16	Tim Tim BLC BLC
Cadillac. 341B Chandler 65 Chandler Royal 75 Chandler Big 6 Chandler Royal 85 Chevrolet 65 Chrysler 65 Chrysler 75 Chrysler 175 Chrysler 180 Cunningham V8	140 109 118 124 124 107 1731/4‡ 1851/2‡ 191‡	1880 2000 2450 2600	29x5.50 32x6.00 32x6.00	Own	SP SP SP SP SP SP	1-2	91/2 87/8 97/8 97/8 97/8 97/8 10 11 135/8	61/2 61/8 61/8 61/8 61/8 61/4 63/4 63/4 61/2 73/8	2 2 2 1 2 2 2	Own Own Own Own Own Own	Eng	3 3 3 3 3 3 3 3 3 3 3	2.78 2.78 2.44 2.44 3.32 3.17 3.17 3.02		Own Own Own Own Own Own	FF. 1/2F. 3/4F. 3/4F. 1/2F. 1/2F. 1/2F. 1/2F. 1/2F. FF.	SB SB SB SB SB SB	4.8 4.9 4.9 4.1 4.5 3.81 4.3° 3.9° 4.08° 4.23	Spr	Spr Spr Spr Spr Spr Spr Spr	9 9 1/2 91/2 81/4 81/4 81/2	BLC Own Own Own Own Own Own
De Soto. Dedge Brothers. 6 Dedge Bros. Senior 6 Duesenberg. 8 duPont. E duPont. G Durant. 40 Durant. 60 Durant. 66 Durant. 70	142-153½ 125° 141 107 109 112	2640	19x6.75 32x6.20 32x6.50 28x4.75	B&B B&B B&B Long. Spec. Long. Lon. 28AM Own Own B&B B&B	SP dp dp SP SP SP SP	1-2 1-2	878 978 978 978 978 978 734 834 912 912 910	61/8 63/4 61/8 53/4 61/2 61/2 6	2 4 4 2 2	Own Own Own	Eng Eng Eng Eng Eng SeU SeU Eng Eng	3 3 3 3 4 4	2.48 3.78° 3.32 3.32 4.1	m-UP. m-Spi. m-Mec. m-Spi. m-Spi. m-Spi. m-Spi. m-Spi. m-Spi. m-Spi.	Col Col Own Own	12F. 12F. 12F. 12F. 12F. 12F. 12F. 12F.	SB SB SB SB	3.5° 4.7	Spr Spr Spr Spr Spr Spr Spr Spr Spr		71/8 84	Own Own Own Own Col Own Own Own Own Own
Elcar	117 123 127–134 109 110½		29x5.00 31x6.00 31x6.50 20x4.75 30x5.00	Long8F Long9C Long 28A Long Own	dp SP	2-1	85/8 93/4 83/4	55/8 61/4 53/4	2	War War War War Own	Eng	3 3 3 3	3.11 3.11 3.04	m-Spi m-Spi m-Spl m-Spi m-Spi	Sal Sal Sal Tim Own	1/2F 1/2F 1/2F 1/2F	SB SB SB SB	4.9 4.4 4.8 4.8 5.6		Spr	91/2 87/8	BLC BLC BLC Tim Own
Ferd. A Franklin. 130 Franklin. 135-137	103½ 120 125–132		30x4.50 31x6.00 31x6.50	Own B&L B&L	SP SP	2-1 2-1	97/8	63/4	2	Own Own War	Eng Eng	3 3		m-Own m-Spi m-Spi	Own Own Own	34F 1/2F 1/2F	SB SB	4.5° 4.7°	Spr			Own Own Own
Gardner 120 Gardner 125 Gardner 130 Graham Paige 612 Graham Paige 615 Graham Paige 627 Graham Paige 827 Graham Paige 837	122 125 130 112 115 121 127 137			B&B. 9R B&B. 9R B&B. 641 Long. 8F. Long. 9AM Long28AM Long28AM Long28AM	SP		878 878 978 834 934 834 834 834	$6^{1/2}$ $6^{1/8}$ $6^{3/4}$ $5^{3/4}$ $5^{3/4}$ $5^{3/4}$		War War War W-G W-G W-G	Eng Eng Eng Eng Eng	3 3 3 4 4 4 4	3.11 3.06 3.54 4.01 4.01	m-Spi m-Spi m-Spi m-UP m-UP m-UP m-UP	Col Col Cla Sal Cla Cla Cla	1/2F. 1/2F. 1/2F. 1/2F. 1/2F. 1/2F. 1/2F.	SB SB SB SB SB SB SB	4.9° 4.5° 4.7 3.9 3.6 3.6 3.9	Spr	Spr Spr Spr Spr Spr	9 9 8 8½ 8½ 83/8 83/8	
Hudson Super Six Hupmebile A Hupmebile M	114		31x6.00° 29x5.50 31x6.00		SP	1-1 2-1	93/4	51/2	2	Own Det Det	Eng Eng	3 3 3	3.11	m-Spi m-Mec m-UP	Own Own Own	1/2F 1/2F 1/2F	SB SB	4.70	Spr Spr		8 9 9	Own BLC BLC
JordanE JordanG	116		28x5.50 30x6.00	Long	SP	1-2	97/8	63/8	2	W-G W-G	Eng	3	3.11 3.12	m-Cle	Col Tim	½F	Wo SB	4.45	Spr	Spr	8	Col Tim
Kissel 6-73 Kissel 8-95 Kissel 8-126	125		30x6.00 30x6.00 30x6.75	B&B. QL10 B&B. QL10 B&B. QL11	SP SP	2-1 2-1 2-1	97/8 97/8 107/8	63/4 63/4 63/4	2 2 2	War War War	Eng Eng	3 3 3	3.11 3.11 3.12	m-Mec m-Mec m-Mec	Col Col Tim	½F ½F ½F	SB SB	4.6 4.8 4.89	Spr	Spr Spr	81/2	Col Col Tim
LaSalle	136 130 138 130	2762 4100	19x6.50 32x6.75 32x6.00 33x6.75 30x6.50	Own Own B&B Own B&B11 QI	dp. MD. SP. SP. SP.	2-1 7-6 2-1	$9\frac{1}{2}$ $7\frac{3}{4}$ $10\frac{7}{8}$ $13\frac{1}{2}$ $10\frac{7}{8}$ $13\frac{1}{2}$	6½ 5¾ 6¾ 9¼ 6¾ 9¼		Own Own W-G Own War Own	Eng SeU Eng	3 3 3 3 4	3.12 3.24 3.11 3.3 3.11	m-Spi m-Spi m-Spi m-Spi m-Spi m-Spi	1	3/F	SB	4.91	Spr	TT Spr TA Spr	7½ 9 9	BLC Own Sal Eat Sal Own
Marmon	120		29x5.50 29x6.00 29x5.50	Roc. 10LL Roc. 10LL B,B10QLD	SP. SP. SP.	1-1 1-1	97/8 97/8 97/8	67/8 67/8 63/4	2 2 2	War	Eng Eng	3 3 3		m-Spi m-Spi m-Spl		1	1		Spr	Spr Spr	83/4	Fair Fair Col
Nash Std. 6 Nash Spec. 6 Nash Adv. 6	108 112½		30x5.00 30x5.25	B&B. 10-N B&B. 11-N	SP.	1-1	87/8 97/8 107/8	61/8 63/4 63/4	2	Own	Eng Eng	3		f-Own. mf-Own. mf-Own.		1	1	1	Spr Spr	Spr Spr	811	NP Own Own

cations



Car Chassis

		WHEELS		S	RIM		CHAS	ME	FRA	LES	SHACKLES FRA		NGS	SPRI			GEAR	EERING	ST		XLE	BRAKES FRONT AXLE							
							CATIO					ear	F	ont	Fr	-	1				(0)				nd	Ha		Foot	
IAKE AND ODEL	1	Make	Type	Make	Diameter and Width (In.)	Type	Make	Make	Material	Type	Make	Length and Width	Type	Length and Width (In.)	Type	Minimum Turning Circle Diameter (Ft.)	9	Туре	Make	Axle End Type	Angle of Wheel Spindles with Horiz.(°)	Angle of Pivot Pin with Vertical (°)	Axle Section Type	Make	Braking Area (Sq. In.)	Type and Location	Application	Braking Area (Sq. In.)	Type and Location
	Auburi	Bim.	A	Fire Fire Fire	18x2 11 18x2 11 18x2 . 7	CR. CR.	Bijur. Bijur. Bijur.	Smi. Smi. Smi.	St St	M M M		56 1 -2 1 56 ³ 4-2 1 56 1 -2 1	½E. ½E.	38 1 2 38 1 2 38 1 2	2E.	40 40 40	15	C&L.	Ross.	RE	2 2 2	1	.1.	Col. Col.	49	ET ET ET	DH DH DH	148 234	F F
wk	Blackh Blackh Buick Buick	Mot Mot Jax Jax	A A A	Cle Cle Jax Jax	19x3 ¹ / ₄ 19x3 ¹ / ₄ 20x2.68 20x3.12	CR. CR. PG. PG.	Bijur Bijur Zerk Zerk	Mur Mur Smi. Smi.	St St St	M. M. M.	STS	60-2\frac{1}{4} 60-2\frac{1}{4} 48-2\frac{1}{2} 48-2\frac{1}{2}	½E. ½E. C	38-214 38-214 361/2-2 363/4-2	12E. 12E. 12E. 12E.	38 42-44	18 18 15.12 17.2	W&R. W&R. S&N S&N	Gem. Jac	RE RE	2.5	7.5 7.5	I. I. I.	Sal Sal Own Own	45 45 98 132½	ET ET IR IR	DH DH DM DM	255½ 255½ 270 350	F F EF
r Ro	Cadilla Chand Chand Chand Chand Chevro Chrysl Chrysl Chrysl Cunni	Jax Mot Mot Mot Own	A A A D A A Opt.	Jax Cle Cle Cle Jax Fire	20x6 19x4 19x4 20x4½ 20x4½ 20x2¾ 18x4 27x4½ 20x5	PG. CR. CR. CR. PG. PG. PG.	Al Bow Bow Bow Al Zerk Zerk Zerk Al	Smi. Own Own Own Own Smi.	St St St St St St St St	M.M.M.M.RRR	GdrGdrOwn.	60-2½ 51-2 53¾-2 59½-2½ 59½-2½ 54-1¾ 55¾-2 57¾-2 58½-2 62x2½	1/2E. 1/2E.	42-21/4 34-2 37-2 403/4-2 43\frac{1}{4}-2 36-13/4 38\frac{1}{4}-2 401/2-2 41\frac{1}{4}-2\frac{1}{4} 40-2\frac{1}{2}	1/2E. 1/2E. 1/2E. 1/2E. 1/2E. 1/2E. 1/2E. 1/2E.	50 35 36½ 39 39 39½ 48½	14.95 16 16 16 16 16 9.5 14	C&L C&L W&G. W&S	Ross. Ross. Ross. Ross. Own. Gem. Gem.		2.5 2.5 2 2.3 1.5 2 2	5 3.3 7.2 7 6	I. I. I. I. I. T. T. T. I.	Own Own Own Own Own Own Own Own Tim.	48 39 39 39 39 70 49 49 49 49 49 49	ET ET ET ET ET ET	MVS MVS DM	2027/8	EF. EF. EF.
Brothers Bros. Se	De Se Dodge Dodge	Kel Kel	W° A° A°	Kel Kel	19x2 ³ / ₄ 19x4 19x4 ¹ / ₂ 20x4 ¹ / ₂ 19x4 19x3 ¹ / ₂ 19x3 ¹ / ₂ 19x4	PG. PG. PG.	Zerk Zerk Zerk	Mid Mid	St St St	M. M. M.	Try Own. Own.	53½-1¾ 54-2 55½-2 62-2½	1/2E. 1/2E. 1/2E. 1/2E. 1/2E. 1/2E. 1/2E. 1/2E.	35½-13 37½-13 37½-2 41-2½ 40-2 40-2 35½-13 35½-13 35½-13	1/2E.E.E.E.E.E.E.E.E.E.E.E.E.E.E.E.E.E.E.	39 45 	13 16 18 18 11 11 11 13 13	W&W.	Gem. Ross. Ross. Ross.	RE RE RE RE RE RE	2 2.5 2.5 2.5 9	7 5.5 5.5 7 6 6 6	I. I	Own Own Own Col. Col. Own Own	43 14 43 14 47 207 207 147 225 7/8	ET. ET. ET. ET. IF. IF.	DH DH DH DM DM DM	365 - 207 207 147 2257	F. F. F. F. IF. IF.
Six	Elcar. Elcar. Elcar. Erskii Essex	Hay Kel Mot	A A A A	Fire Fire Hay. Kel.	19x4 19x4 20x4 20x3 ¹ / ₂ 20x4	PG. OG. PG. PG.	Al Zerk Al	Mid Mid Mid Mid Own	St St St St	F F M. M.	Bel Bel Bel Own.	53½-2 56-2¼ -2½ 52-1¾ 54¾-2	1/2E. 1/2E. 1/2E. 1/2E. 1/2E.	34½-2 38-2 -2 32-1¾ 56-2	1/2E. 1/2E. 1/2E. 1/2E. 1/2E.	39 39 46 36	Var Var Var 13 15	C&L C&L W&S W&S	Ross. Gem. Gem.	RE RE EL RE	11/2	7	I.I.I.I.I.I.I.I.I.I.I.I.I.I.I.I.I.I.I.	Sal Sal Tim Own	36½ 49¼ 49¼ 178 109½	ET. IF. IF.	DH. DH. DM. DM.	168 320 178 1091	F. F. F. F.
n 1	Frank	Mot	A	Mot.	20x4	PG. PG.	Zerk	Own Own	St.	M M M		$-2\frac{1}{2}$ $38-1\frac{3}{4}$ $38-1\frac{3}{4}$	FE.				16.9	W&S C&L W&S	Ross. Own.	RE RE	2	7	T	Own Own		ET.	DM. DH. DH.	2251/	F. F.
Paige Paige Paige Paige Paige	Gardi Gardi Grahi Grahi Grahi Grahi Grahi	Mot Cle Bim Mot Mot Mot Mot	A A A A A A	Cle. Mot. Fire. Cle. Cle. Cle. Cle. Mot.	19x21 19x21 18x234 19x4 19x4 19x41 19x41 19x41 19x41 19x41	PG. CR. PG. PG. CR. CR.	Al Am Am Zerk Zerk Bijur Bijur Bijur	Mid Mid Mid Own	St. St. St. St. St. St. St. St. St.	. M . M . M . M . M . M	Try. Try. Own Own	54-21/4 54-21/4 57-21/4 54-2 58-2 58-21/4 58-21/4		36-2 36-2 38-2 36-2 36-2 38-2 38-2 38-2	1/2E. 1/2E. 1/2E. 1/2E. 1/2E. 1/2E. 1/2E.	40 40 43	15½-12 17-14½ 15 15 16 16 16	C&L	Ross.	RE RE RE RE			I	Cla.	4.9	ET. ET. ET. ET. ET. ET.	DH. DH. DH. DH.	1531 187 1853 1853 1854	F. F. F. F. F.
Sur bile	Huds	Mot Kel	A	Fire. Hay.	19x4½ 19x2	PG.	Al	Own Smi	St.	M M	Own	57 11 -2 54-2 5714-2		39-21/4 37-2 37-2	16E	40	20	W&S C&L C&L	Gem. Ross	RH	2.5		n. I	. Owi	. 289.	IF IF IF	DM.	242 289 289	F. F.
	Jorda	Mot	A			PC	11	Mid	Q4	D		52-2 55 ³ / ₄ -2	1/12		-			W&S	-			7 7.5		1		ET.	DH.	300	F.
	Kisse Kisse	Mut.	A	Fire.	18,4½ 18x4½ 18x5	PG.	Al	Smi	St.	. R.		57-2 57-2 60-21/4		38-2 38-2 40-21/4	1	41	Var	C&L C&L C&L.	Ross Ross	RI	2 2 2	7 7	- 1	Col Col		ET. ET. ET.			F.
obile obile obile obile	LaSa Linco Loco Loco Loco Loco	Hay. Hay. Bim. PJon			19x5 20x3 ³ / ₄ 20x3 ¹ / ₂ 21x3 ³ / ₄ 18x4 ¹ / ₂ 21x3 ³ / ₄							. 58-2½ . 60-2½ . 58-2¼ . 60-2½ . 58-2¼ . 50-2¼	LOT	20.0	1 /13	40 45 48 45	. 14 . 14½-17 . 14½-17 . 16-19		Jac. Own Ross Ross Ross	RI El RI RI RI		1			74 136 154 180 154	IR ER IR IR IR	DM DM DM DM DM	175 2721 308 360 308	F.F.F.F.
on	. Mari	Hay. Hay.	A°.	Hay Hay								563/8-1 . 56-8-2 . 54-21/4	1/2E 1/2E 1/2E	38 1 1 38 1 2 36 2	1/2E 1/2E 1/6E	38 40	. 14	C&L. C&L.	Ross	RI	2 2 2				224 224 371/4			224 224 200	
	1	1	1	-	20x4 19x4 ¹ / ₄ 20x5											38	. 13	C&L. W&S.	Ross	RI	2 1.5	. 6	n. I	6 Ow	1163	ER	DM	. 184	BF



American Passenger Car

	GE	NERA	L		;C	LUTC	н				GEAL	RSET			: REAR AXLE								
MAKE AND MODEL	Wheelbase (In.)	s Weight (Lbs.)	Tire Size	Make and Model	Туре	9 5	Dia.(In.)	um Dia.(In.)	-	Make		er of rd Speeds	Gear Racio	Universals Type and Make	Make		Drive	Ratio	sion Taken By	e Taken By	num Road nce (In.)	Differential Make	
	Wheel	Chassis				Number and Driv	Maximum	Minimum	Number		Location	Number Forward	Low G			Type	Final Drive	Gear	Propulsion	Torque	Minimum	Differe	
Oakland AA6 Oldsmobile F-29 Overland Whip 96A Overland Whip 98A	117 113½ 103¼ 112½	1600	28x5.25 28x4.75	Own B,B97-1085 B&B 8Q Roc 9-LL	SP	2-1 2-1 2-1 2-1	. 87/8 67/8 77/8	5½ 6½ 5½ 5½	2 2 2 2	Mun Mun Own	Eng. Eng. Eng.	3 3 3	3.2	m-Mec. mf-UP°. m-Mec. m-Mec.	Own Own Own	1/2F 1/2F 1/2F 1/2F	SB SB SB	4.45° 4.4 4.56 4.56	Spr Spr Spr Spr	Spr Spr Spr Spr	8	Own BLC NP	
Packard 626,633 Packard 640 Peerless 6-61 Peerless 6-91 Peerless 5.8 Pierce-Arrow 133 Pierce-Arrow 143 Plymouth Six	140 116 116 120 130–138 133		29x5.50 31x6.00 33x6.20 19x6.50 18x7.00 20x4.75	Long. B&B. 10QL B&B. 10QL B&B. 11QL B&B. 11QL Long 29 AM Long 29 AM	SP SP dp dp	2-1 3-2 1 2-1 2-1 2-1 3-2 3-2	11 934 978 978 1078 1078 818 818 818 878	6^{1}_{2} 6^{1}_{4} 6^{3}_{4} 6^{3}_{4} 6^{3}_{4} 6^{3}_{4} 5^{3}_{4} 5^{3}_{4} 5^{1}_{2}	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Own Own Det Det Own B-L Own Own Own	Eng Eng Eng Eng Eng Eng Eng Eng Eng	300000000000000000000000000000000000000	3.11 3.11 3.33 2.97	m m-Mec. m-Spi. m-Spi. m-Spi. m-Spi. m-Spi. m-Spi. f m-Mec.	Own. Own. Col. Col. Col. Own. Own.	12F. 12F. 12F. 12F. 12F. 12F. 12F. 12F.	Hyp. SB. SB. SB. SB. Hyp. Hyp. SB. SB.	4.88 4.25 4.45° 4.3 4.18	Spr Spr Spr Spr Spr Spr Spr Spr Spr	Spr Spr Spr TA TA Ta Spr Spr	.8 ⁷ / ₈₂ .9 ⁸ / ₃₂ .8 ³ / ₄ 	Col Col Col Own Own Own	
Reo. The Mater Reo. The Master Reamer. 8-80 Roamer. 8-80 Rolls-Royce. Si.Gh Rolls-Royce. N. Ph	115 121 120 126 136 143½ 146½	2710	30x6.20 32x6.00 32x6.00 32x6.20 33x6.75	B&B B&B B&B	SP.	2-1 2-1 2-1 2-1 2-1 2-1	978 934 878 934 10	634 614 618 634 634	2 2 2 2 2 2	War Own War War Own	Eng Eng Eng Eng Eng SeU SeU	3 3 3 3 3 3 3 3 3		m-Mec m-Mec m-Mec	Sal Own Sal Sal Sal Own	1/2F. 1/2F. 1/2F. 1/2F. 1/2F. 1/2F. FF.	SB SB SB SB SB SB	4.45 4.45 4.45 4.64 3.71 3.71	Spr Spr Spr Spr Spr TT	Spr Spr Spr Spr Spr TT.		Sal Own Sal Sal Own Own	
St'rns-Kni.M&N6-80 St'rns-Kni.H&J 8-90 Studebaker Dic. Studebaker Com. 6 Studebaker Com. 8 Studebaker Pres. 8 Studebaker Pres. 8 Studebaker Studebaker Studebaker Studebaker Pres. 8	137-145 113 1191/2 1191/2 125 135		20x5.50 19x5.50 19x5.50 20x6.00 19x6.50	Long 29AM	SP. SP. dp. dp	2-1 2-2 2-1 2-1 2-2 3-2 3-2 1-1	107/8 93/4 93/4 93/4 93/4 83/4 107/8	634 614 512 612 614 534 534 634	2 4 2 2 2 4 4 2	Own. Own. W-G. W-G. Own. Own. Det.	Eng Eng Eng Eng Eng Eng Eng	3 3 3 3 3 3 4	3.01 2.97 3.04 3.04 2.97 2.97	m-Mec m-Mec m-Spi m-Spi m-Spi m-Spi m-Spi m-Mec	Own. Own. Own. Own. Own. Own. Own. Tim	34F. 12F. 12F. 12F. 12F. 12F. 12F.	SB SB SB SB SB SB SB	4.3 3.91 4.36° 4.08 4.31°.	Spr Spr Spr Spr Spr Spr Spr	Spr Spr Spr Spr Spr Spr Spr	85/8 85/8 81/4 81/4	NP Tim Own Own Own Own Tim	
Willys-Knight70B Willys-Knight66B Windsor Wh. Pr. 8-82 Windsor Wh. Pr. 8-92	$\begin{array}{c} 112\frac{1}{2} \\ 120 \\ 125\frac{1}{2} \\ 125\frac{1}{2} \end{array}$		32x6.00	B-W	SP	2-1 2-1 	107/8	63/4	2	Own Own W-G W-G	Eng Eng Eng	3 3 4	3.15	m-Mec. m-Mec. m-Cle m-Cle	Own Own Col	½F ½F ½F ½F	SB SB SB	4.89 4.4 4.8°	Spr Spr Spr	Spr Spr Spr	81/2		

ABBREVIATIONS:

**—Others also

*—Overall Length

A—Artillery (Wheels)

Al—Alemite

B—Ball Bearing

B&B—Borg & Beck

BF—Internal and External

Four Wheels

Bim—Bimel
B-L—Brown-Lipe
BLC—Brown-Lipe Chapin
Bow—Bowen
Bel—Belflex
B-W—Borg-Warner
C&L—Cam and Lever
C—Cantilever
C—Cone
CarS—Carbon Stee
Cle—Cleveland

Cla—Clark
Col—Columbia
CR—Central Reservoir
CS—Carbon Steel
DH—Direct Hydraulic
DM—Direct Mechanical
Day—Dayton
Det—Detroit
Dis—Disteel
dp—Double plate
Eat—Eaton

El—Elliot
Eng—Unit with Engine
EF—External Four Wheels
EER—External Rara Wheels
ET—External Transmission
½E—Semi-Elliptie
¾E—½Elliptie
F—Fabrie (Shackles)
f—Fabrie (Universals)
Faf—Fafnir (Ball Bearing)
Fair—Fairmount Machine Co.

FE—Full Elliptic

3/F—3/Floating

3/F—3/Floating

5/F—3/Floating

FF—Full Floating

Fire—Firestone

Gem—Gemmer

Gdm—Godrich

Hay—Kelsey-Hayes

Hyp—Hypoid

HyPS—Hydraulic Pressed Steel

1—"1" Section



American

		GEN	NERAL		ENGINE																				
MAKE		·		9	-	* *		ment	Ratio				Valve		es		Oiling System		ue	Fuel System		E	System		
AND MODEL	Price \$	Wheelbase (Ins	Tire Size (Ins.)	Weight with Ca	Make and Mod	No. of Cylinder Bore and Strok (Ins.)	Rated H. P. (N.A.C.C.)	Piston Displace (Cu. Ins.)	Compression Ra	Suspension	Cylinder Head	Number Cast in One Piece	Arrangement	Head Ma-	Drive	Piston Material	Pressure to.	Pump Type	Water Circulati	Carburetor Make	Fuel Feed	Make Make	Current source	Generator and Starter Make	Voltage
Checker K Ford A §§Premier 4-F §Rauch & Lang. T Saí-T-Cab D Yellow 061 mproved Yellow 06	2400 2350	103½ 112 112 125½ 125½	30x4.50 30x5 33x4½ 32x6.20 6.50x18	4150 3400 4500 4640	Buda CS-6 FordA Buda WTU Buda. WU LycHT Buick. Std. Buick116	4-3 ⁷ / ₈ x4 ¹ / ₄ 4-3 ³ / ₄ x5 ¹ / ₈ 4-3 ³ / ₄ x5 ¹ / ₈ 6-3 ¹ / ₂ x5 6-3 ⁵ / ₈ x4 ⁵ / ₈	22.50 22.50 29.6	200.5 226.4 226.4 288.0 239.1	4.10	3 I 3 I 4 I 3 I	Det Det Int Det Det	6 4 4 4 6 6	T L L I.	Sil Ast Sil	Heli Heli Heli Heli	SS. CI. CI.	abce	Gear Gear Gear Gear	Pump Pump ThS Pump Pump	Zenith	Gra Vac Gra Vac Gra	Own ABos ABos D-R	B	Own ABos †Dyne: D-R D-R	6-

- ABBREVIATIONS:
 "—At extra cost
 "—Others furnished
 §\$—1928 specifications
 §—Exhaut valve only
 †—Starter at extra cost
 ;—Starter Make Gray & Davis
 a—Main Bearings
 A—Artillery
 ABes—American Bosch

- Al-Aluminum

- Al-Aluminum
 A-L-Auto-Lite
 Ast-Alloy Steel
 b-Connecting Rods
 B-Battery
 B-Fw-Both Four Wheel
 B-L-Brown-Lipe
 B&B-Borg & Beck
 BM-Battery & Magneto
 c-Camshaft Bearings
- C&L—Cam and Lever
 Cha—Chain
 CI—Cast Iron
 Col—Columbia
 Cont—Continental
 CR—Central Reservoir
 d—Wrist Pins
 D—Disk
 Det—Detachable

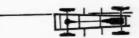
- Det—Detroit (Gearset)
 D-P—Double Plate (clutch)
 D-R—Delco-Remy
 Dyn—Dyneto
 e—Gear Case
 Ecc—Eccentric
 Eng—Unit with Engine
 E-P—Electric Pump
 Ext-Da—External Drive Shaft
- Ext-Fw—External Four Wheels
 Ext-Rw—External Rear Wheels
 f—Fabric
 f—(Oiling System)—Rocker Arm
 3/4 F—3/4 Floating
 Gra—Gravity
 F F—Full Floating
 Gem—Gemmer

Ful

Jone Jone

Heli Hyd I—I Int-I Int-I L—I Lav-Lye-M—

Chassis—Continued



		BRAN	KES		F	RO	NT A	XLE		ST	EERIN	G GEA	R		SPRI	NGS		SHACE	LES	FR	AME	CHAS		RI	MS	WH	EELS	
	Foot		Har	nd				(0)						F	ront	1	Rear					CATI	ON					
Type and Location	Braking Area (Sq. In.)	Application	Type and Location	Braking Area (Sq. In.)	Make	Axle Section Type	Angle of Pivot Pin with Vertical (°)	Angle of Wheel Spindles with Horiz.(°)	Axle End Type	Make	Type	Ratio (to one) **	Minimum Turning Circle Diameter (Ft.)	Type	Length and Width (In.)	Туре	Length and Width (In.)	Make	Type	Material	Make	Make	Type	Diameter and Width (In.)	Make	Type	Make	MAKE AND • MODEL
IF BF BF	288 244	DM DM. DM. DM.	ET. ER ER. ER.	413/4 1291/2	Own	I.			RE	Own.	S&N W&G. W&G.	15 16 11 11	36 39	1/2E. 1/2E. 1/2E. 1/2E.	35-2 33-1 ³ / ₄ 34 ¹ / ₂ -	1/2E.	54½- 54½-2 49-1¾ 51¾-	Trv	M. M.	St.	Smi. Own	Al	PG.	18x4 19x3½ 19x4	Cle Hay	A	Hay	Oakland
IF IF IF IF IF	360½ 360½ 360½ 350 350 118 192	DH. DH. DH. DH. DM. DM.	IR. ET. ET. IR. ET. ET.	180½ 24	Col Col Col Eat. Own Own	I. I. I. I. I. I.	7.5 8 8	2 2 2 2 2 1 1	RE RE RE RE RE RE	Own. Ross. Ross. Ross. Ross. Gem. Gem. Gem.	W&W.	18 18 18	90	1/2E. 1/2E. 1/2E. 1/2E. 1/2E. 1/2E. 1/2E.	37½-1¾ 37½-1¾ 37½-2 38-2 38-2 38-2 35½-1¾	1/2 E. 1/	60-21/2	Faf Faf	M. M. B B	St St St St	Par. Par	Al Al Zerk Zerk	PG. PG. PG. PG. PG°	19x4 19 21- 19x4 ¹ / ₂	Mot Mot Mot Fire Hay	Dis° A A Dis. A A	Mot Mot Mot Mot Mot	Packard 626,633 Packard 640 Peerless 6-61 Peerless 6-91 Peerless 5t. 8 Pierce-Arrow 133 Pierce-Arrow 143 Plymouth. Pontiac Sis
IF EF EF IR IF	198 198 213 ¹ / ₂ 365	DH. DH. DH. DH.	ET. ET. ET. ET. IR.		Sal Own Sal Sal Sal Own Own	I. I. I. I.			RE RE RE	Ross. Ross. Ross. Ross. Ross. Own.	C&L C&L C&L C&L C&L S&N S&N			1/2E.	37-2 37-2 36-2 36-2 371/2-2 431/2- 45-	1/2 Hi	55-2 55-2 571/221/4 571/2-21/60-21/4 541/2- 541/2-	Fire°	R R M. M. M.	St St St St	Smi. Smi.	Zerk Zerk Al Al Al	PG. PG. PG. PG. PG.	18x4 18x4	Mot Mot	A. Opt. Opt. Opt. W	Mot	Reo The Mater Reo The Master Reamer 8-78 Reamer 8-80 Reamer 8-80 Rolls-Royce . Si.Gh Rells-Royce . N. Ph
IF IF	444	DM. DM. DM. DM. DM. DM. DM.	IF. ET. IF. IF. IF.	6533 444 481/8 236 236 372 372 45	Tim. Own Own Own Own Own Tim.	I. I. I. I.	7.5	2.5	RE RE RE RE RE	Ross. Ross. Ross. Ross. Ross.	C&L C&L C&L C&L	15 15 15 15 16	45	1/2E 1/2E 1/2E 1/2E 1/2E	36-2	1/2E. 1/2E. 1/2E. 1/2E.	54-2	Faf Faf Faf Faf Faf	B B B B	St St St St	Own Mid Mid Mid Mid	Al Zerk . Zerk . Zerk . Zerk . Zerk . Zerk . Zerk	PG. PG. PG. PG. PG.	20x5 20x5 20x4 19x4 19x4 20x4 19x4½ 20x4½		A A A A° A°	Hay . Kel . Kel . Kel . Kel°.	St'rns-Kni.M&N6-8(St'rns-Kni.H&J 8-9(Studebaker Dis Studebaker Com. Studebaker Com. Studebaker Pres. S Studebaker Pres. S Studebaker Pres. S
BF IF EF	243	DM DM. DH. DH.	ER.		Own Own Col. Col.	.I.			RE RE RE	Own	W&G. C&L. C&L.	Var.		1/2E 1/2E 1/2E 1/2E	36 ³ ⁄ ₄ - 39- 36-2 36-2	16E	55¼ 57- 45-2¼ 54-2¼		M	St.	Own	Om Om	CR. CR. CR.			W		Willys-Knight70E Willys-Knight66E Windsor Wh.Pr 8-92 Windsor Wh.Pr 8-82

IF—Internal Four Wheels
IR—Internal Rear Wheels
Jac—Jacox
Jax—Jaxon
Kel—Kelsey
M—Metal (Shackles)
m—Metal (Universals)
MD—Multiple Disk
Mec—Mechanics
Mar—Marles
Mid—Midland

Mot—Motor Wheel
Mun—Muncie Products
Mur—Murray
Mut-Mufual
MVS—Mechanical Vacuum Servo
NP—New Process
Om—Oilometer
Opt.—Optional
PG—Pressure Gun
PJen—Phineas Jones
PS—Pressed Steel

Par—Parish
P&B—Parish & Bingham
RSI—Rubber Shock Insulator
RE—Reverse Elliot
Rec—Rockford
Sal—Salisbury
Sal—Salisbury
Seu—Separate Unit
Smi—Smith
Spi—Spicer

Spr—Springs
S&N—Screw and Nut
St—Steel
STM—St. Marys
STS—Standard Spring Steel Co.
T—Tubular
TA—Torque Arm
TT—Torque Tube
T)-2E—Transverse Semi-Elliptic
Tim—Timken
UP—Universal Products

Var—Varies
W—Wire Wheels
War—Warner Corp.
W-G—Warner Gear
W-G—Worm & Gear
W&N—Worm and Nut
W&R—Worm and Roller
W&S—Worm and Wheel

Taxicabs

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and Starter Make Voltage

Wheels Wheels

cker Arm



				TR	ANSM	ISSI	0 N									RU	NNING	GEAR					
CI	lutch		Gearset		Universa	l Joints			Rea	r Axl	e		Br	ikes		9	Stee	ring Gear	tion				MAKE
				or-	pur				ive	tio	la M	By	Type and	Location	s Type	rle Mal			Lubrica	of Rear	Type		AND MODEL
Make	Туре	Make	Location	No. of F	Number	Type	Make	Туре	Final Dr	Gear Ra	Propulsi Taken B	Torque Taken B	Foot	Hand	Shackle	Front A	Make	Type	Chassis	Length Spring	Wheels,		
Fuller Detlaff Jones	M D D SP. M D D M D D M D D M D D M D D	Fuller. Det. Fuller. Mun.	Eng Eng Eng	3 3	2-Pick 2-Spicer.	f m m m	Col Sta Col Tim	% F 1/2 F 1/2 F	S B S B S B	4.50 5.10 4.5 4.9	Sp Sp Sp	Sp Sp Sp	Ext-Rw Ext-Rw Int-Fw B-Fw	Ext-Ds Ext-Ds Ext-Ds	r m f r	Col Sta Col Tim	Ross Ross Ross	W & W C & L C & L	P G P G P G	59 1/2 59 1/2 585/8 57 1/8	D. Hyd. W. Own D. P & I D. P & I D. Mid. D. Mid. D. Mid.	B	Checker K Ford A §§Premier 4-F §§Rauch & Lang T Saf-T-Cab D Yellow 06Improved Yellow . 06

Heli—Helical Gear
Hyd—Hydraulic
I—In Head
Int—Integral
Int—Rw—Internal Rear Wheel
L—Both Valves at Side
La—Lavine
Lyc—Lycoming
M—Magneto

m—Metal
Mech—Mechanics Machine Co.
Mp—Mechanical Pump
MDD—Multiple Dry Disc
MDO—Multiple Disc in Oil
Mid—Midland
Mun—Muncie
N-E—North East
O—Optional

P&B—Parish & Bingham
PG—Pressure Gun
r—Rubber
RR—Radius Rods
RBos—Robert Bosch
S—Sleeve Type
Sal—Salisbury
S B—Spiral Bevel
Sil—Silicon Chromium

SchN—Serew and Nut
Sp—Springs
Spl—Splash
SpP—Splash with Pressure
S P—Single Plate
S S—Semi Steel
Sta—Standard
Th S—Thermo Siphon
Tim—Timken
TT—Torque Tube

U-P—Universal Products
Vac—Vacuum
WarG—Warner Gear
Wauk Waukceha
West—Westinghouse
W—Wire Wheels
W & G—Worm and Gear
W&N—Worm and Nut
W & S—Worm and Sector
W & W—Worm and Wheel



American Passenger

				GENE	RAL				PEN- ION		CRANKCA: Materia		ALVES		nt End rive		PISTO	N		PISTON	PIN	(ONN	ECT	ING ROI	DS
CAR MAKE	Engine Make			nent	tio		•			et in 1 Block					or .										Lower B	earin
AND MODEL	and Model	No. of Cyl. Bore and Stroke (Ins.)	Rated H. P. (N.A.C.C.)	Piston Displacement	Compression Ratio	Maximum Brake Horsepower at Specified R.P.M.	Cylinder Blocks	No. of Points		No. of Cyls. Cast	1—Sep. Casting	Arrangement	Ex. Valve Head Material	Type	Make of Chain Non-Metallic	Material	Length (Ins.) Weight (Ozs.)	Pin Center to Top of Head	No. of Rings and No. Above Pin	Diameter and Length (Ins.)	Bearing In	Material	Center to Center Length	Weight (Oz.)	Diameter and Length (Ins.)	Type
Auburn. 6-80 Auburn 8-90 Auburn 120	LyeWS LyeGS LycMDA	6-27/8x43/4 8-27/8x43/4 8-31/4x41/2	19.84 26.45 33.80	185.0 246.7 298.64	5.16 5.15° 5.25°	65-3400 93-3300 120-3300	Ver. Ver. Ver.	4 4 4		6 I 8 I 8 C		. L.	SiCh, SiCh, SiCh,	. Ch	L-B L-B	Als Als	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{vmatrix} 1\frac{15}{18} \\ 1\frac{15}{16} \\ 2\frac{7}{16} \end{vmatrix}$	3-3	7/8x2.41 7/8x2.41	Pis	St St	9½ 9½ 9 9		2½x1¼ 2½x1¼ 2½x1¼ 2½x1½	Pou
Blackhawk L6 Blackhawk L8 Buick 116 Buick 121-129	Own BL	6-3 ³ / ₈ x4 ¹ / ₂ 8-3x4 ³ / ₄ 6-3 ⁵ / ₁ 6x4 ⁵ / ₈ 6-3 ⁵ / ₈ x5	28.8 26.33	241.5 268.5 239.1 309.0	5.5° 4.3	85-3200 90-3200 74-2800 90½-2800	Ver. Ver.	4 I 4 I 3 I 3 I	Ri.	6 C 6 C	II. Al PS II. PS III. PS	. L.	SiCh	Ch Ch He He	L-B GE GE	Als CI	$4\frac{12}{64}$ 27 $3\frac{5}{8}$ $3\frac{31}{32}$ $4\frac{5}{64}$	$2\frac{27}{64}$ $2\frac{1}{8}$ 2.33 2.26	4-4 4-4 3-3 3-3	7/8x227	FF FF Pis Pis	St	91/4 98/4 10 111/4	42	2 ³ / ₈ x1 ³ / ₈ 2 ¹ / ₄ x1 ⁵ / ₁₆ 2 ¹ / ₈ x1 ¹ / ₂ 2 ³ / ₈ x1 ³ / ₄	Pou Pou
Cadillac. 341B Chandler 65 Chandler Royal 75 Chandler Big 6 Chandler Royal 85 Chevrolet 6 Chrysler 65 Chrysler 75 Chrysler Imp. 80 Cunningham V-8	OwnOwnOwnOwnOwnOwn	6-3 ³ / ₄ x5 8-3 ³ / ₈ x4 ³ / ₄ 6-3 ¹ / ₆ x3 ³ / ₄ 6-3 ¹ / ₈ x4 ¹ / ₄ 6-3 ¹ / ₄ x5	23.4 28.8 33.7 36.4 26.3 23.4 25.3 31.5	340	5.0 5.0 5.0 5.01 5.2° 5.0° 6.0	95–3000 55–3000 80–3200 83–2600 95–3000 46–2600 65–3200 75–3200 112–3400 106–2500	Ver. Ver. Ver. Ver. Ver. Ver.	4 1	Ri Ri Ri Ru Ru	8 6 6 8 6 8 6 8 8 6 8 8 6 8 8 8 8 8 8 8	SS. PS SS. PS MIT PS SS. PS SS. PS SS. PS	L.	Car. SiCh. Car. Car.	Ch.	MOR MOR MOR MOR MOR MOR MOR GE	NI CI CI CI CI Als Als CI	3 ²³ / ₃ 28 3 ³ / ₄ 28 4 ¹ / ₂ 40 4 32 3 ¹¹ / ₁₆ 32 8 4 ¹ / ₁₆ 4 14 3 16 4 16 4 30	$\begin{array}{c} 2\frac{7}{32} \\ 2\frac{1}{4} \\ 2\frac{3}{4} \\ 2\frac{3}{4} \\ 2\frac{3}{8} \\ 1\frac{7}{8} \\ 2\frac{15}{16} \\ 2\frac{16}{14} \end{array}$	3-3 3-3 3-3 4-4 5-5	78x25/8 78x25/8 132x35/6 332x25/2 .99x27/8 13x21/6 78x27/8 1x31/4	Pis Pis Pis Pis Pis	Car. Car. Car. St. Car. ASt. Car.	8½ 9½ 10 10	32 40 36 24.8	236x234 236x176 214x116 214x116 212x176 212x176 212x138 178x138 2x138 2x138 2x138 2x138	Pou Pou Pou Pou Pou Pou Pou
De Sote	Own Own Own Own Wisc Y	6-3x4½ 6-338x378 6-338x4½ 8-334x434 6-338x5	27.3 27.3 45.0 27.3	207.9 241.4 420 268.3 322 152 185 185	5.0° 5.18° 5.5 5.2 4.6 5.3 4.7 4.7 5.4	55-3200 58-3000 78-3000 265-4200 75-3000 114-3200 36-2400 43-2800 47-2800 65-3000	Ver. Ver. Ver. Ver. Ver. Ver.	4 II 4 II 4 II 4 II 4 II 4 II	Ri Ru Ri	6 I 8 C 6 C 6 C 6 C 6 C 6 C 6 C 6 C 6 C 6 C	r PS ZI. Al r PS Wilr PS ZI. CI ZI. CI	L. L. L. I. L. L. L. L.	SiCh. SiCh. SiCh. SiCh. SiCh. St. NiSt.	Ch	MOR MOR° MOR° L-B. MOR MOR MOR MOR	Als	315 1734 315 1734 315 16 1734 315 4 20 336 15 316 16.01	2 5 16 125	3-3 4-4 4-4 3-3 4-4 3-3 3-3 3-3 4-4	354 354 116 116 106 106 106 106 106 106	Rod Pis Rod Rod Pis Pis Rod Rod	DFa St Car. St St	9	59 29 26 26	116x114 216x131 236x238 276x176 212x112 214x112 112x1.43 2x118 2x118 218x138	Pou. Pou. Pou. Pou. Pou. Pou. Pou. Pou.
Elcar. 95-96 Elcar. 75 Elcar. 120 Erskine Six Essex Challenger.			26.45 19.84 33.8 18.1 18.1	298.6 160.3	5.25° 5.25° 5.25° 4.8	90-3000 61-3000 115-3300 43-3000 55-3600	Ver. Ver. Ver.	4 H 4 H 4 H	Ru Ru Ru Ru	8 C 6 C 8 I 6 C	I. PS I. PS I. PS I. PS I. PS	L. L. L. L. L.	SiCh. SiCh. SiCh. ChN. SiCh.	Ch Ch Ch Ch		Als Als CI Als	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 1\frac{15}{16} \\ 1\frac{15}{16} \\ 2\frac{7}{16} \\ 1\frac{3}{4} \\ 1\frac{11}{16} \end{array}$	3-3 3-3 4-4 4-4 3-3		Rod Rod Rod Rod FF	St Al St	91/2 91/2 9 8 3 8 16	22½ 27	2½8x1¼ 2½8x1¼ 2½8x1½ 2x1½ 1¼8x1¾	Pou. Pou. Pou. Pou. Pou.
Franklin 130 Franklin 135-137	OwnA	4-37/8x41/4 6-31/4x43/	24.03 25.3 29.4	236	4.2 4.57 4.73	40-2200 48-2500		3 S 3 H 3 H	Ri	4 II 1 A 1 A	r‡ PS	L. I. I.	Car. SiCh. SiCh.	He Ch	Cel Ram Ram	Als Als	$\begin{array}{c} 3\frac{29}{32} \\ 3\frac{27}{32} \\ 25\frac{1}{2} \end{array}$	21/4	3-3 4-4 4-4	1x37/8 7/8x215 7/8x215 7/8x215	Rod Pis Pis	Dur	$\begin{array}{c} 7\frac{1}{2} \\ 9\frac{1}{2} \\ 9\frac{1}{2} \end{array}$	25.6 23 23	1½x15/8 2½x127 2½x127 2½x117	Pou Pou Pou
Gardner. 120 Gardner 125 Gardner. 130 Graham-Paige 612 Graham-Paige 621 Graham-Paige 621 Graham-Paige 827 Graham-Paige 827	Lyc GT Lyc GS Lyc MDG Own 	8-2 ³ / ₄ x4 ³ / ₄ 8-2 ⁷ / ₈ x4 ³ / ₄ 8-3 ¹ / ₄ x4 ¹ / ₂ 6-3 ¹ / ₄ x4 ¹ / ₂ 6-3 ¹ / ₂ x5 8-3 ³ / ₄ x4 ¹ / ₄	26.45 33.8 21.6 25.35 29.4 36.45	246.7 298.6 190.8 224 288.6	5.51 5.35 5.54	65-3200 85-3400 115-3300 62-3200 76-3200 97-3200 120-3200 120-3200	Ver. Ver. Ver. Ver. Ver.	4 4 4 4 4 4 1 4 1 4 1	Ru	8 C 8 C 6 C 6 C 8 C 8 C	EL PS EL PS EL PS EL St.	L. L. L. L. L. L. L.		Ch Ch Ch Ch	L-B L-B L-B L-B L-B	CI Al Als Als Als Als	3\frac{1}{2} 16 3\frac{1}{2} 22.5 3\frac{1}{6} 24.2 3\frac{1}{2} 13\frac{3}{4} 3\frac{1}{2} 16\frac{1}{2} 4\frac{3}{2} 21\frac{3}{8} 3\frac{1}{6} 18 3\frac{1}{6} 18	$\begin{array}{c} 1\frac{15}{16} \\ 1\frac{15}{16} \\ 2\frac{7}{16} \\ 2\frac{3}{32} \\ 2\frac{3}{32} \\ 2\frac{15}{2} \\ 2\frac{5}{16} \\ 2\frac{5}{16} \end{array}$	4-4 3-3 3-3 3-3 3-3 3-3 3-3	7/8x2 \$\frac{9}{32} 7/8x28 \$\frac{9}{2} 7/8x28 \$\frac{9}{2} 7/8x28 \$\frac{9}{2} 13x2 \$\frac{9}{16} 13x2 \$\frac{1}{16} 121 \$\frac{1}{16} 1x2 \$\frac{1}{16} 1x2 \$\frac{1}{16} 23 \$\frac{3}{4} 23 \$\frac{4}{4} 25 \$\frac{1}{16} 23 \$\frac{3}{4} 23 \$\frac{1}{4} 2	Pis Pis Rod Rod Rod Rod Rod	Car. Dur. St St St	9	39 24.9 30¼ 30¼ 48 42	21/8x11/4 21/6x11/4 21/6x11/2 21/4x11/4 21/4x11/4 23/6x11/2 21/4x11/2 21/4x11/2	Pou Pou Pou Pou Pou Pou Pou Pou
	OwnA	6-3½x5 6-3¼x4¼	25.35	211.5	6.0 4.8 5.0		Ver. Ver. Ver.			6 I	PS r l‡. Al.	. L.		Ch Ch	MOR.	Als CI CI	4 ¹ / ₁₆ 19	21/4	3-2	1.09x2 ¹¹ / ₁₆	FF Pis Pis	Car.	11.6 834 91/2		2½x2 2½x1¼ 2¾x1¼ 2¾x1¼	Pou Pou Pou
ordan E (Cont	6-33/x45/e	27.34 28.8	248.3 268.6	5.05	70-3000 85-3200	Ver. Ver.	4 H	Ru Ri	6 I	r PS	L. L.	SiCh.	Ch	L-B L-B	Als		25/16	4-4 3-3		FF	St	9 934		2½x1¾ 2¼x1¾ 2¼x1¾	Pou Pou
Kissel 6-73 (Kissel 8-95 (Kissel 8-126 (Own 73 Own 95 Own 126	6-2 ⁷ / ₈ x4 ³ / ₄ 8-2 ⁷ / ₈ x4 ³ / ₄ 8-3 ¹ / ₄ x4 ¹ / ₂	19.8 26.5 33.8	185 246.5 298.6	5.1 5.35 5.35	52-2900 95-3200 126-3400	Ver.	4 H 4 H	Ru	8 I	r Al .	. L.	SiCh. SiCh. SiCh.	. Ch	L-B L-B L-B	Als	3½ 3½ 3½ 3½ 24½	$\begin{array}{c} 1\frac{15}{16} \\ 2\frac{7}{16} \end{array}$	4-4 4-4 4-4		Rod Rod Rod	Dur Dur Dur	$9^{1/2}_{9^{1/2}}_{9}$	$\begin{array}{c} 22\frac{1}{2} \\ 22\frac{1}{2} \\ 29 \end{array}$	21/8x11/4	Pou. Pou. Pou.
a Salle	Own Dwn Lyc . Spec. Lyc . HDL Own 90 Own 48	8-3 ¹ / ₄ x4 ¹ / ₁₆ 8-3 ¹ / ₂ x5 8-3 ¹ / ₂ x4 ¹ / ₂ 8-3 ¹ / ₄ x4 ¹ / ₂ 6-3 ⁷ / ₈ x5 ¹ / ₄ 6-4 ¹ / ₂ x5 ¹ / ₂	33.8 36.0	385 298.5 298.6 371.5	5.3° 4.8 5.0 5.3 4.25 4.25	86-3000 \\ 90-2800 \\ 90-3200 \\ 115-3300 \\ 86-2800 \\ 105-2100 \\	Vee. Ver. Ver Ver.	4 .	Ru Ru Ri	X 111	ET IPS	11.	SiCh. SiCh. SiCh. SiCh. SiCh. CoCh.	Ch	I_B	Al Als CI	3 2 3 4 3 4 18 . 5 3 15 24 1/2 24 1/2 48 5 1/2	$\begin{array}{c} 1\frac{31}{64} \\ 2 \\ 2\frac{7}{16} \\ 2\frac{7}{16} \\ 2\frac{5}{8} \\ 2\frac{13}{16} \end{array}$	3-2 3-3 4-4 4-4 3-3 3-3	7/8x31/8 7/8x 7/8x2.8 7/8x2.8 11/8x35/8 11/8x41/4	Pis Rod Rod Rod	DFa DFa Dur.	12½ 9 9 11.6	29	23/8x28/4 2x21/2 21/8x11/2 2.13x11/2 21/4x1118 21/4x2	Pou Pou
Marmon	Own 68 Own 78 Cont 11E	8-213x41/4 8-215x4 6-33/8x4	25.3 27.6 27.3	211.2 216.8 214.7	5.25 5.5 4.9	76-3200 86-3400 66-3150	Ver.	4 H 4 H		8 C 8 C 6 L	1		SiCh. SiCh. ASt.		Dia Dia MOR.	Al	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	$\begin{array}{c} 1\frac{15}{16} \\ 1\frac{15}{16} \\ 2\frac{3}{8} \end{array}$	3-3 3-3 4-4	$\frac{3}{4}x2\frac{7}{16}$ $\frac{47}{64}x2\frac{1}{2}$ $\frac{86}{64}x2\frac{13}{16}$	Rod FF FF	St	$8\frac{1}{2}$ $7\frac{3}{4}$ $8\frac{1}{16}$	33	17/8x13/8	Pou
Nash Std. 6 Nash Spec. 6 Nash Adv. 6	Own 430	6-31/4x41/2	25.3	184.0 224.0 278.4	5.15	50-2800 65-2900 78-2900	Ver.	4 H 4 H 4 H	Ru Ru Ru	6 S 6 S	S PS S PS S PS	L. I. I.	SiCh. SiCh. SiCh.	He He	Cel Cel	Als Als	$\begin{array}{c} 3\frac{1}{4}\frac{3}{6} \\ 3\frac{7}{8} \\ 4\frac{1}{32} \\ 25\frac{7}{8} \end{array}$	$\begin{array}{c} 2\frac{1}{4} \\ 2\frac{3}{8} \\ 2\frac{13}{32} \end{array}$	4-4 4-4 4-4	18x27/8 1/8x2.71 18x27/8	Pis FF FF	Car. Car. Car.		44 39 44 ³ / ₈	1½x1 = 2½x1	Die Die Die
Dakland' AA-6 Oldsmobile F-29 Overland Whip.96A. Overland Whip.98A	Own F29 Own 96A	6-3 1 x 4 1/8 4-3 1/8 x 4 3/4	24.4 15.6	212.0 197.5 145.7 178.3	5.2 5.1	60-2800 \ 62-3000 \ 40-3200 \ 50-3200 \	Ver.	3 H 4 H 4 .	Ru	6 C	I Sha	S. L. L.	SiCh SiCh Chr	Ch	MOR. MOR. L-B	CI	4 3 ⁷ / ₈ 26 31	2 18 2 18 2 18 2	3-2 3-3 3-3 3-3	1 16 x 2 15 85 x 2 78 47 x 2 13 64 x 2 13 81 x	Rod Pis	Car. St St	91/4 9 9-18 93/8	38 30.4	$2\frac{1}{4}x1\frac{1}{2}$ $1\frac{7}{8}x1\frac{3}{8}$ $1\frac{7}{8}x1\frac{5}{16}$ $1\frac{7}{8}x1\frac{5}{16}$	Pou Pou Pou

ABBREVIATIONS:

°—Others used
ABos—American Bosch
Al—Aluminum
Als—Aluminum Alloy
AL—Auto-Lite
AM—Air Maze
Asco—Ascoloy
AST—Alloy Steel
ATC—Air Tube Cellular
Au—Automatic
B—Battery
Ball—Ball and Ball

BR—Bronze
Br—Brass
Car—Carbon Steel
Car—Carbon Steel
Car—Carter (Carburetor)
Ce—Centrifugal
Cell—Cellular
Cel—Celoron
CF—Cross Flow
Ch—Chain
ChN—Chrome Nickel
Chr.—Chromium
ChSI—Chorne-Silicon
CI—Cast Iron
Co—Chain, Overhead Camshaft

CoCh—Cobalt Chrome Steel
Cont—Continental
CSM—Chrome Silica Manganese
DeJ—Delon
Del—Deloo
DFa—Drop Forged Aluminum
Di—Distillation Dia—Diamond
Die—Die Cast Chain
DM—Direct Mechanical
(Sliding Gear)
D-R—Deloo-Remy
Dur—Duralumin
Dyn—Dyneto
Ecc—Eccentric

ExS—Extruded Steel
F—In head and side
F—In head and side
F—ExT—Fin and Tube
Fed—Fedders
FIO—Floating
FF—Full Floating
FF—Full Floating
FF—Full Floating
FF—General Electric
Ge—Gear
Gra—Gravity
GS—German Silver
Ha—Hand
Han—Handy
Har—Harrison

He—Helical Gear

I—Valve in Head

In—Inertia

Ir—Iron

Jam—Jamestown

Joh—Johnson

L—"L" Head

L-B—Link Belt

Lye—Lycoming

Mar—Marvel

Mag—Magnetic Shift

McC—McCord

Med—Modine

MOR—Morse

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Car Engines



	•	CRA	NKSHAFT		0	ILING			CC	OLI	NG SY	STEM		FU	EL SYS	TEM				ELE	CTRIC	CAL S	YSTEM			
			Main Be	arings							Rad	diator				Clean		Iş	gnitio	n	Starter	-	E	latter	y	CAR
Counterbalanced?	Torrigan Vibration		Number Front Diameter and Length	Rear Diameter and Length	System Type	Pump Type	Cleaner Type	Туре	Thermostat?	Shutters?	Make	Core Type	Shell Material	Carburetor Make and Size (Ins.)	Feed Type	Make	Туре	Make	Current Source	Spark Control	Generator and Sta Make	Starter Engagement	Length	Height	Volts and Ampere-Hrs.	MAKE AND MODEL
No No		Yes.	4 23/8x17/8 5 23/8x17/8 5 23/8x2116	23/8x17/8 23/8x17/8 23/8x2116	PG PG	Ge Ge		Pu.	Yes.	No		Cell Cell	St St	Sch. 11/4 Sch. 11/4 Sch. 11/4	Vac Mp Mp	None None		D-R. D-R. D-R.	B	S-A S-A S-A	D-R. D-R. D-R.	In	$9\frac{1}{16}$ $9\frac{1}{16}$ $10\frac{3}{8}$	x7x9 ₁ x7x9 ₁ x7x9 ₁	6-90 6-90 6-100	Auburn 6- Auburn 8- Auburn 1
No Yes Yes Yes	s. J	Yes. Yes. Yes.	$\begin{array}{c} 7 & 2\frac{1}{2}x3\frac{17}{32} \\ 5 & 2\frac{13}{16}x1\frac{15}{32} \\ 4 & 2\frac{3}{8}x2\frac{1}{4} \\ 4 & 2\frac{1}{2}x2\frac{7}{16} \end{array}$	$\begin{array}{c} 2\frac{1}{2}x2^{5}/8 \\ 2\frac{13}{16}x2^{3}/8 \\ 2\frac{3}{8}x2\frac{9}{16} \\ 2\frac{1}{2}x2\frac{23}{32} \end{array}$	PI PG PC	Ge Ge Ge	Fi Fi Fi	Pu Pu Pu Pu	No		Fed Har	Cell Cell Cell	St St St	Zen. 2°	Mp.	AC	Ce Fi In	D-R. D-R. D-R. D-R.	B	S-A	D-R. D-R. D-R. D-R.	In DM	$10\frac{5}{16} \times 6$ $10\frac{5}{16} \times 6$ $9\frac{1}{16} \times 7$ $10\frac{3}{16} \times 7$	18x91 18x91	6-120 6-100	Blackhawk
Ye No Ye Ye No Ye Ye Ye Ye	es. 198. 198. 198. 198. 198. 198. 198. 198	Yes. Yes. Yes. Yes. Yes. Yes.	3 234x131 3 234x211 5 212x134 4 223x25 4 223x25 7 17xx132 7 17xx17 7 214x17 7 224x17 7 25xx11 3 234x3	23/8x27/8 23/8x23/4 21/2x21/5 21/3x31/4 23/4x25/8 21/6x21/6 1-7-x21/3	PF PG PG PG PS PG PG PF	Ge	Fi Fi No Fi	Pu Pu Pu Pu Pu Pu	Yes. Yes. Yes. No., Yes. Yes. Yes.	No No No Yes. Yes. Yes.	Fed	RiC. ATC. ATC. ATC. RiC. RiC. RiC. RiC. RiC.	PS.	Own. Til. Sch. Sch. Car. Str. 12, Ball. 13 Str. 13, Str. 11	Vac. Vac. Vac. Vac.	AC AC None Uni	Ce Ce Ce	D-R. D-R. D-R. D-R.	B B B B B	Au	D-R. A-L. D-R. D-R. D-R. D-R. D-R. D-R. D-R.	In In In In In In In In In	20½x5 9¾x6 10½x7 10½x7 10½x7 10½x7 11¾x7 11¾x7 115x7	14x91 14x91 14x91 14x91 78x8 12x9 12x9 14x83	6-10: 6-10: 6-12: 6-12: 6-90: 6-93: 6-11: 8-15:	Cadillac. 34 Chandler Royal. Chandler Royal. Chandler Royal. Chandler Royal. Chevrolet. Chrysler. Chrysler. Chrysler. Imp.
Ye No No No No No No No No No No No No No	0 0 28. 0 0 0	No No Yes. No Yes. No Yes. Yes.	4 214x158 7 214x176 7 236x216 5 234x356 3 212x252 5 256x158 3 112x178 4 218x152 4 218x152 7 238x1532	2 ¹ / ₄ x2 ¹ / ₄ 2 ³ / ₈ x2 ³ / ₆ 2 ⁵ / ₈ x2 ⁵ / ₇ 2 ³ / ₄ x2 ⁷ / ₈ 2 ¹ / ₂ x2 ³ / ₄ 2 ¹ / ₈ x1 ⁵ / ₇ 2 ¹ / ₈ x1 ⁸ / ₆ 2 ³ / ₈ x2 ³ / ₆	PH. PG. PI. PH. PB. PG. PG. PG.	Ge. Ge. Ge. Ge. Ge. Ge. Ge. Ge.	Fi No Fi No Fi	Pu Pu Pu Pu	Yes. Yes. No No	No Opt. Opt. No No	MeC MeC Mod Fed Fed Fed	F&T.	PS. PS. PS. PS. PS. PS. PS. PS. PS.	Str. 11/ Sch. 11/ Sch. 11/ Sch. 11/ Til. 1 Til. 1	Vac. Vac. Mp. Ep. Vac. Vac. Vac. Vac.	Uni. Uni°. Uni°. None. None. None. None. Til.	Ce	N-E D-R. Del D-R. A-L A-L	B B	S-A S-A S-A S-A	D-R. N-E D-R. Del D-R. A-L A-L A-L	In In In In In	10 ¹ / ₂ x ⁷ 10 ⁵ / ₆ x ⁷ 11 ¹ / ₁₆ x ⁷ 10 ³ / ₆ x ⁷ 9 ¹ / ₁₆ x ⁷ 9 ¹ / ₈ x ⁷ 10 ⁷ / ₆ x ⁷ 10 ³ / ₈ x ⁷	14x87 14x91 x914 32x93 x95 x95	8 6-10 6-11 6-18 6-11 6-11 6-84 6-84	De Seto. Dodge BrosSe Dodge BrosSe Duesenberg duPont. duPont Durant Durant Durant Durant Durant
No.	0	No Yes.	5 23/8x17/8 4 23/8x17/8 5 23/8x25/8 4 21/8x17/6 3 21/2x15/8	23/8x17/8 23/8x17/8 23/8x23/4 21/2x115 21/32x2	PH PH PH PH PS.	Ge. Ge. Ge. Ecc.	Fi	Pu. Pu. Pu. Pu. Th.	No No	No No	Jam Jam Jam Long Har.	Cell. RiC F&T.	St St St St PS	Seh11.	Vac	None. None. None. None. AC.		D-R. D-R. D-R. D-R. A-L.	B	S-A	D-R. D-R. D-R. D-R. A-L.	In In	10½x 8½x 10½x 936x 9x7½	1/8x8 1/2x8	6-90 6-11	4 Elcar
	es.	No Yes. Yes.	3 15/8x2 7 23/8x2112 7 23/8x2112 7 23/8x2112	15/8x31/8 23/8x213 23/8x211 23/8x211	PS. PB. PB.	Ge. Ge. Ge.	No Fi Fi	Air.	No.	Yes.	Own. No No	. No	PS	Str 11	Gra Mp Mp	None. Uni. Uni.	Ce.	Own. D-R. D-R.	B	Ha S-A S-A	Own. D-R. D-R.	In	95/8x 121/2x 121/2x	14x9 14x9	8 6-80 8 6-13 8 6-13	Ford
ZZZZZZ	0 0 0 0	Yes. Yes. No Yes. Yes. Yes. Yes.	5 23/8x17/8 5 23/8x17/8 5 23/8x211/8 7 21/2x111/8	23/8x17/8 23/8x17/8 23/8x23/4 21/2x2 21/2x2 23/4x21/2 25/8x244	PG. PG. PG. PG.	Ge. Ge. Ge. Ge. Ge. Ge. Ge.	No. Fi. Fi. No. Fi. Fi. Fi.	Pu. Pu. Pu. Pu. Pu. Pu.	Yes. Yes. Yes. Yes. Yes. Yes.	No No No Au Au.	Fed. Fed. Fed. Long. Long. Long. Long. Long.	Cell. Cell. F&T. F&T. F&T. F&T.	PS PS St St St St	Sch. 11 Sch. 11 Sch. 11 Joh. 11 Joh. 11 Joh. 13 Joh. 13		No AM AM AC AC AC AC AC	Fi. Fi. In In In In	D-R. D-R. D-R. D-R. D-R. D-R. D-R.	B. B. B. B. B.	S-A S-A S-A S-A	D-R. D-R. D-R. D-R. D-R. D-R. D-R.	In In In	10½x 10½x 10½x 105%x 9½x 10½x 11½x 11½x	63/4x9 63/4x9 7x81/4 71/4x9 71/4x8	6-12 6-13 6-84 6-10 6-11	0 Gardner. 0 Gardner. 5 Gardner. Graham-Paige. 0 Graham-Paige. 4 Graham-Paige. 4 Graham-Paige.
. N	0	Yes. Yes. Yes.	4 23/8x2 16 4 23/2 x15/8 5 2 16 x1 3/2	$\begin{array}{c} 2\frac{15}{32}x3\frac{11}{32} \\ 2\frac{25}{64}x2\frac{1}{8} \\ 2.44x2.2 \end{array}$	PS PG. PF	Ecc. Ge.		Pu. Pu. Pu.	Yes.	Ha No Au			St PS PS	Mar13		AC. Han.	In Fi.	A-L. A-L. A-L.	B	S-A.	A-L. A-L. A-L.	DM In	$ \begin{array}{c} 10\frac{1}{4}x \\ 10\frac{5}{16}x \\ 10\frac{5}{16}x \end{array} $	71/4x8	§ 6-10	0 Hudson 0 Hupmobile 0 Hupmobile
		Yes. Yes.	7 23/8x 5 23/8x2 5 16	1	PG.		1	Pu.		Au.		. Cell.	PS	. Str	. Мр			A-L.	В.		A-L.	In	1		6-10	Jordan5 Jerdan
N	0	Yes. Yes. Yes.	4 23/8x13/4 5 23/8x13/4 5 23/8x2.6	2 ³ / ₈ x1 ³ / ₄ 2 ³ / ₈ x1 ³ / ₄ 8 2 ³ / ₈ x2 . 6	PG. PG. PG.	Ge. Ge. Ge.	Fi. Fi. Fi.	Pu. Pu. Pu.	Yes. Yes. Yes.	No. No. No.	Mod. Mod. Mod.	F&T.	PS PS	Sch. 11 Sch. 11 Sch. 11	Vac Vac Vac	AC	In In In	D-R D-R D-R	B B B	S-A. S-A. S-A.	D-R D-R D-R	In In	918x 918x 1038x	71/4x9 71/4x9 71/2x1	6-90 6-90 6-11	Kissel Kissel
N	0 0 0	No Yes. Yes. Yes. Yes. Yes.	3 28/x1 #							Au. Au. No. Au.	Har. Own Fed. Fed.	RiC F&T. RiC	PS. PS. PS.	Own	2 Mp. Vac. Vac. Vac. Vac. Pre.	No Own AM AM Uni	Ce. Ce. Ce.	D-R. Del. DeJ. DeJ. DeJ. DeJ. DeJ. D-R.	B. B. B. B. B. B.	S-A. S-A. S-A. S-A. S-A. S-A.	D-R. Del. DeJ. DeJ. DeJ. West	DM. In In In Mag	10 ³ ₁₈ x 19 ⁷ ₈ x 11 ³ ₄ x 12 ¹ ₂ x 20x5 ₁ 17 ¹ ₄ x	(XY1/2	0-14	La Salle
N	0	Yes. Yes. Yes.	5 2½8x15/5 5 23/8x1⅓ 7 2½8x1¾							No. No. Ha.	Fed. Fed. Fed.	Cell. Cell. RiC.	PS PS	Str1 Str1 Str1												20 Marmon 20 Marmon
N	0	Yes. No. Yes.	7 2x1\frac{15}{16} 7 2\frac{1}{4}x2\frac{1}{4}							1				Car1			1							7x915 7x934	6-10 6-10	05 Nash
Y	es.	Yes. No	4 2 5 x 1 1 4 2 4 x 1 3 4		PH.	Ge.	Fi.		Yes No.	No. Ha.	Har.	RiC.	PS. ShS.	Mar.	Mp. Mp. Vac.	AC AC No	In	D-R D-R A-L	B. B. B.	Au Au Au	D-R D-R A-L	In DM. In	. 10 5 x 97/8 x 9x71	71/4x9 71/4x9 4x813	6-10 1/8 6-11 6-8	Odkland' Oldsmobile Overland Whip Overland Whip

Mp—Mechanical Pump
N-E—North East
NI—Nickel Iron
NiS—Nickel Silver
NiSt—Nickel Silver
Nist—Nickel Steel
Opt—Optional
PA—Pressure to mains,
rods, pins and camshaft
PB—Pressure to main and rod
bearings only
PD—Pressure to mains, rods, and
wrist pins

PE—Pressure to mains, rods, wrist pins and timing case
PF—Pressure to all bearings including wrist pins
PG—Pressure to mains, rods, camshaft, timing case
PH—Pressure to mains, rod and camshaft bearings
PI—Pressure to mains, rod, camshaft, wrist pins, and timing case
PJ—Pressure to mains, camshaft and timing case

PT—Plain Tube
Pis—Piston
Pou—Poured
Pre—Pressure
PS—Pressed Steel
PS—Splash with pressure (Oiling
System)
Pu—Pump
Ram—Ramsey
Ri—Rigid
RiC—Ribbon Cellular
R&R—Rubber & Rigid
Ru—Rubber

SI—Sleeve Valve
S-A—Semi-Automatic
SB—Sheet Brass
Sch—Schebler
Sep—Separate Liner
SiCh—Silicon Chrome Steel
ShS—Sheet Steel
Sp—Spring Cushioned
Spec—Special
SS—Semi-Steel
Ste—Stewart
Str—Stromberg
I—"I" Head

Tex—Textolite
Th—Thermo-syphon
Til—Tillotson
Tub—Tubular
Uni—United
Vac—Vacuum
Va—Vane
Ver—Vertical
West—Westinghouse
Wisc—Wisconsin
Whi—Whitney
Zen—Zenith



American Passenger

				GENE	RAL			SUSI	ON	M/	NKCASE ITERIAL	VA	LVES		t End		PI	STO	N		PISTON	PIN	C	ONNE	CTI	NG ROD	s
CAR	Engine			at						in I Block																Lower Be	earing
MAKE AND MODEL	Make and Mødel	No. of Cyls. Bore and Stroke (Ins.)	Rated H. B. (N.A.C.C.)	Piston Displacement	Compression Ratio	Maximum Brake Horsepower at Specified R.P.M.		No. of Points	Type	Upper	Lower Law	Arrangement	Ex. Valve Head Material	Type	Make of Chain or Non-Metallic Gear	Material	Length (Ins.)	Weight (Ozs.)	Center to	No. of Rings and No. Above Pin	Diameter and Length (Ins.)	Bearing In	Material	Center to Center Length	Weight (Oz.)	Diameter and Length (Ins.)	Туре
Peerless 6-81 Peerless 6-91 Peerless Std. 8 Pierce-Arro' 133-143 Plymouth.	Own Cont18C Own90 Cont Own	6-33/8x45/8 6-31/2x5 8-33/8x41/2 8-31/2x41/2	39.2 27.34 27.34 29.4 36.4 39.2	170.3	4.38 5.0° 4.6 4.9	90-3200 106-3200 62-3000 66-2900 70-2500 114-3300 125-3200 45-2800 57-3000	Ver. Ver. Ver. Ver. Ver. Ver.	4 H 3 H	Ri Ru Ru	8 Al: 8 Al: 6 CI 6 Al: 8 NI 8 Ir. 4 Ir.	Al ShS	L L	SiCh	Ch Ch Ch Ch Ch He	MOR.	Als Als Als Als Als	3 15 3 16 3 3 4 1 2 4 1 2 4 1 3 2	21½	2½ 2½ 2½ 256 256 11/8 2.3 2.4	4-4 4-4 4-4 3-3 4-4 4-4 3-3 3-3	78x \$\frac{5}{2}x2\frac{3}{4}\$\$\$\frac{5}{2}x2\frac{7}{8}\$\$\$\$1\frac{5}{2}x2\frac{7}{8}\$\$\$\$1\frac{5}{2}x2\frac{7}{2}\frac{5}{2}\$\$\$.859x2.9\$\$\$\frac{15}{2}x3\frac{1}{16}\$\$\$\$3\frac{1}{4}\$\$\$\$\$\$\$4x\$\$\$\$\$\$	Pis Rod Pis FF Rod Rod	Car. St St St	9 10 9 9.02	421/2	17/8x13/8 21/8x1.36 21/8x1.36	Pou. Pou. Pou. Pou. Pou. Pou. Pou.
Reo The Master Reamer. 8-80, 8-88	Lyc. 4HM° LycGT Own40-50	6-3 ³ / ₈ x5 8-3 ¹ / ₄ x4 ¹ / ₂ 8-2 ³ / ₄ x4 ³ / ₄ 6-4 ¹ / ₂ x4 ³ / ₄	27.3 33.8 24.2 48.6	268.3 298.6	5.5 5.3 5.0 4.94	65-2800 80-3200 86-3000 75-3400	Ver. Ver.	4 H	Ru	6 CI. 6 CI. 8 Ir‡ 8 IR. 3 Al‡ 3 Al‡	CI.	L L L L I	SiCh	Ch	L-B MOR. L-B	Als	315 334 31/2	23	2 1 1 1 5 1 1 6	4-4 4-4 4-4 6-6 5-5	7/8x27/8 7/8x2.28	FF Rod Pis. Pis. Rod Rod	St. Dur° Car. ASt.	816 9 91/2			Pou.
Studebaker. Com. 6 Studebaker. Com. 8 Studebaker. Pres. 8	Own. H8-90 Own GE Own	8-3½x5 6-3½x4½ 6-3¾x4½ 8-3½x4¾ 8-3½x4¾	39.2 27.3 27.3	385.0 242.0 248.3 250.4 337.0	4.41° 4.95° 5.05° 5.5°	70-3200 120-2800 67-2800 74-3000 80-3600 114-3200 115-3600	Ver. Ver. Ver. Ver. Ver.	3 F 4 F 4 F 4 F 4 F 4 F	Ru Ru Ru Ru	6 Al; 8 Al; 6 CI. 6 CI. 8 CI. 8 CI. 8 CI.	PS PS	L L	SiCh.	He He	MOR. MOR. Cel L-B.	CI CI Als Als	41/4 4 8 3 7 8 3 7 8 3 7 8 3 3 4 4 1/4 4 1/4 4 1/7	36 31.2 14	$\begin{array}{c} 2\frac{7}{16} \\ 2\frac{6}{16} \\ 2\frac{13}{16} \\ 2\frac{13}{27} \\ 2\frac{17}{32} \\ 2\frac{1}{16} \\ 2\frac{27}{64} \end{array}$	4-4 5-4 5-4 4-4 4-4 4-4	11x31/8 7/8x3 7/8x3 7/8x25/8 11x31/4	Rod Pis Rod Rod Rod Rod FF	St. St St	12 10	36.3 36.3 40	21/4x15/8 2x11/2 2x11/2 11/8x1 = 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Pou. Pou. Pou. Pou. Pou.
WindsorWh. Pr. Willys-Knight70B Willys-Knight66B	Cont15S Own70B Own66B	8-3x4 ³ / ₄ 6-2 ¹⁵ / ₁₆ x4 ³ / ₈ 6-3 ³ / ₈ x4 ³ / ₄	28.8 20.7 27.3	268.6 177.9 255.0	5.5	88-3100 70-3200	Ver.	4 . 4 . 4 .		6 Ir	PS.	SI.	SiCh Sl	Ch.	L-B L-B	Als.			27/16	4-4 4-4 4-4	\$1x234	FF Rod Rod		10	251/2		Ce Ce

ABBREVIATIONS:

-Others used ABos—American Bosch Als—Aluminum Alloy AL—Auto-Lite AM—Air Maze Asco—Ascoloy

ASt—Alloy Steel
ATC—Air Tube Cellular
Au—Automatic Au—Automatic
B—Battery
Ball—Ball and Ball
BR—Bronse

-Brass
r-Carbon Steel
r-Carter (Carburetor)
-Centrifugal
II-Cellular
I-Celoron -Cross Flow

-Chain -Chrome Nickel Chr—Chromium ChSI—Chrome-Silicon

CI—Cast Iron
Co—Chain, Overhead Camshaft
CoCh—Cobalt Chrome Steel
Cont—Continental

CSM-Chrome Silica Manganese

CSM—Chrome Silica Mangane
DeJ—DeJon
DeL—Deloo
DFa—Drop Forged Aluminum
Di—Distillation
Dia—Diamond Chain
Die—Die Cast
DM—Direct Mechanical
(Sliding Gear)

(Sliding Gear)

-Delco-Remy

-Duralumin

-Dyneto Eccentric Extruded Steel

F&T—Fin and Tube Fed—Fedders

-Filter --General Electric --Gear --Gravity --German Silver --Hand —Handy —Harrison —Helical G

Valve in Head

Lycoming -Marvel -Magnetic Shift -McCord

-Modine

No

No

No No No No No No

Books for the

Organized Training in Business

WITH the increasing size and complexity of modern business organizations the problem of training personnel has developed into a much more difficult task than when the head of the business could train each employee himself. Much money and thought has been given to this subject by progressive concerns and their experiences have been drawn upon freely by the author, who here attempts to correlate all the detail divergences to be found in individual plans into a set of fundamental principles of training which apply under all conditions. The capacity of Dr. Greene, who is director of the Research Bureau for Retail Training, University of Pittsburgh, for undertaking a work of this kind is fully testified to by Paul G. Hoffman, vice-president, Studebaker Corp. of America, who contributes a foreword to the book. Mr. Hoffman sees the outstanding job of industry as the building of men and believes that the present book is a real contribution not only to business economics but to social welfare.

Sales Contracts and Forms

Prentice Hall, Inc. 454 pp. Illus. \$7.50.

HIS book contains principally actual word-for-▲ word reproductions of over 200 forms, designed for practically every sales purpose. Forms reproduced were carefully selected from a great number contributed by sales managers throughout the country and have to do with sales agreements, salesmen's contracts, sales office and field reports. The book contains also many legally tested agreements relative to territorial rights, trade acceptances, chattel mortgages, leases of places of business, rejections, cancellations and similar items. In general, it should be very valuable to anyone who must use sales contracts or forms in his work.

1928 United States Aviation Report

United States Aviation Report, Inc., Baltimore. 670 pp.

HIS is designed to be a complete book upon the law of aviation as it has developed in the United States up to the latter part of the year 1928. It conger

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Car Engines—Continued



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		Main Be	arings							Ra	diator				Ai Clea		1	gnitic	n				Bat	tery		CAR
Offset (Ins.) Counterbalanced?	Torsional Vibration Damper?	Number Front Diameter and Length	Rear Diameter and Length	System Type	Pump Type	Cleaner Type	Туре	Thermostat?	Shutters?	Make	Core Type	Shell Material	Carburetor Make and Size (Ins.)	Feed Type	Make	Type	Make	Current Source	Spark Control	General and Starter Make	Starter Engagement	Length	Width	Height	Volts and Ampere-Hrs.	MAKE AND MODEL
Yes Yes No No. No No Yes.	Yes. No Yes. No	9 25/8x 7 21/8x11/2 7 23/8x13/2 7 23/8x23/2 5 2.62x1.65 9 25/8x13/4 3 17/8x23/3	25/8x 21/8x17/8 23/8x2 ³ /8 23/8x2 ³ /8 2.62x2.53 25/8x2 ¹ /3 17/8x2 ¹ /3	PG PH PH	Ge Ge Ge Ge Ge Va	Fi Fi Fi	Pu Pu Th	Yes. No No No	No Au Au Au No	Fed	RiC Cell Cell Cell Cell Cell	NiS.		Vac. Mp. Mp. Vac. Mp. Mp. Vac.		No In In In	N-E A-L A-L. Del D-R. Del	B B B B B B.	S-A S-A S-A S-A S-A	Del .	In In In In DM DM In	13½1 10¾1 10½1 10½1 10½1 9½1	7x9 71/4 71/6 71/2	15 16 1914 1916 1916	6-160 6-92 6 6 6-115 6-90	Packard 626-6 Packard 640-6 Peerless 6-Peerless 6-Peerless 6-Peerless Std. Pierce-Arro 133-1 Plymouth Pontiac S
io No io No io No io No io No	Yes. Yes. Yes. Yes. Yes.	$72\frac{5}{16}x2\frac{3}{16}$	25x234 23/x13/	PH PC PH	Ge Ge Ge	Fi No	Pu Pu Pu	Yes. No	No No	Har		PS	Sch 11/2	Vac Vac Pre	Uni Uni No No	Ce	D-R. A-L. A-L. ABos	B B	S-A S-A S-A S-A	D-R.	DM In	8 11 10 75 10 36 10 36 13 36 13 56 13 56 1	7 1/42 7 1/61 7 5/81 7 3/61	1911 1934 1934 1936	6-120 6-130 6-120	ReoThe Ma ReoThe Mast Roamer 8-30, 8- Roamer8- Rolls-Royce S. G Rolls-Royce N. P
No Yes. No No No No No No No No No No	No Yes. Yes. Yes. Yes. No	4 1 1 2 x 2 3 1 2 9 2 x 1 3 %	3x3 2½x2 ¹³ / ₁₆ 2½x2 ¹³ / ₁₆ 2x1.43 2 ⁵ / ₈ x2.63	PG PG PG	Ge Ge Ge Ge	Di Fi Fi	Pu Pu Pu Pu	Yes. Yes. Yes. Yes.	No No No No	Fed. McC McC McC Long.	RiC RiC F&T F&T F&T Cell	PS	Til. 114 Til. 114 Str. 114 Str. 114 Str. 114 Str. 114 Str. 12	Mp. Mp. Mp. Mp. Mp.	Til Til No No No No AM.	Ce	DeJ D-R. D-R. D-R. D-R.	B B B B	S-A S-A S-A	DeJ D-R. D-R. D-R. D-R.	In	13 127 17x7! 9 127 9 127 103% 13x7;	4x9 74 74 74 74 74	19 14 19 14 19 14 19 14 19 14	6-192 6-90 6-90 6-90 6-111	St'rns-K.M&N 6-St'rns-K. H&J 8-Studebaker . D Studebaker . Com. Studebaker . Com. Studebaker . Com. Studebaker . Pres. Stutz.
No No.	Yes.	5 23/8x13/8 7 21/4x2 7 21/2x111	21/4x21/2	PG PG PA	Ge Ge	Di	Pu	Yes.	No	Fed Own	Cell. Cell.	St	Str Til1 Til	Vac Vac				B	S-A S-A S-A	A-L.		101/41			6 6-166	WindsorWh. P Willys-Knight76 Willys-Knight66

NI-Nickel Iron
NiS-Nickel Silver
NiSt-Nickel Steel
Opt-Optional
PA-Pressure to mains,
rods, pins and cam-

shaft PB—Pressure to mains, rods and

rB—Fressure to mains, rods and timing case PC—Pressure to main and rod bearings only PD—Pressure to mains, rods, and wrist pins

pins and timing case
PF—Pressure to all bearings including wrist pins
PG—Pressure to mains, rods, camshaft, timing case
PH—Pressure to mains, rods and
camshaft bearings
PI—Pressure to mains, rods, camshaft, wrist pins, and timing
case

case PJ—Pressure to mains, camshaft

Pou—Poureu
Pre—Pressure
Pre—Pressure
PS—Pressed Steel
PS—Splash with pressure (Oiling
System)
Pu—Pump
Ram—Ramsey

Rubber & Rigid

Sp-Spring Cush

Business Book Shelf

tains collections of decisions, reports, regulations, and other information pertaining to aviation activities.

A Picture of World Economic Conditions

National Industrial Conference Board, Inc., New York. 118 pp. THE National industrial contests and having made arrangements with a number of men having THE National Industrial Conference Board has intimate knowledge of and wide experience and high standing in the economic life of their respective nations, to supply periodic reviews of current situations and significant developments in industrial, financial, commercial and labor conditions in their countries. The present volume is the first summary review of conditions in the principal countries of the world, based upon this special information. Some 17 countries are covered in the report, including Great Britain, Germany, France, Italy, Japan, Australia, Russia, China and a number of South American and Central American countries. For comparative purposes a brief review of economic conditions in the United States is also contained.

A College Grammar

Mason Long, The Ronald Press Co., New York. 323 pp. \$3. LTHOUGH intended primarily as a college texthook, this volume provides a convenient manual of accepted contemporary usage to explain and illustrate the functions of individual parts of speech and the formulas according to which they may be combined in order to make correct and effective sentences. Much of the material presented has never appeared before in English grammars, and many principles have been stated in a new form, more simply and better classified than has been heretofore available.

Patents: Law and Practice

Oscar A. Geier, Richards & Geier, 274 Madison Ave., New York. 46 pp.

HIS is the fourth edition of a well-known volume ■ covering the rules of practice in the United States Patent Office and in foreign countries. The book is intended to give manufacturers and others interested in patents up-to-date information on latest developments in this field. The book is available for free distribution.



1929 Body and Equip

NOTE: The body models listed below represent the lowest pri

		GENE	RAL							BODY				_				E	QUIF	MEN	IT			
			~		lere	90	-4		Covering	Materials	1		ield	46		ock d?	per			9				<u>+</u>
MAKE & MODEL OF CHASSIS	Body Model	Price (\$)	Wheelbase (Ins.)	Tire Size (Ins.)	Weight of Complete Car (Lbs.)*	Number of Doors	Body Framework Material	Body Panels	Rear Upper Quarter Sections	Upholstery	Тор	Type of Finish	Type of Windshield	Type of Wheels	Bumper	Snubbers or Shock Absorbers Fitted?	Windshield Wiper	Trunk Rack	Engine Thermometer	Dash Gas. Gage	Car Heater	Cigar Lighter or Smoking Set	Clock	Locks and Theft- proof Devices
Auburn6-80			120	30x6.00		4	M&W.	Steel	Fabrio	Leather		Pyrox		A	Yes.	Yes. Yes.	Yes. Yes.	Yes.	Yes. Yes.	Yes. Yes.	No No	No	No No	I, D
Auburn8-90	Phaeton Sed Spt. Sedan	1695 1395	125	30x6.00 30x6.00	3590	4	M&W. M&W.	Steel	. Fabric Steel	Leather Mohair.		Pyrox		A	Yes. Yes.	Yes.	Yes.	No	Yes.	Yes.	No	No	No .	I, D
Auburn120	Phaeton Sed	2095 1795		18x6.50 18x6.50		4	M&W. M&W.	Steel	Fabric.	Leather Mohair		Pyrox		A	Yes. Yes.		Yes.	No	Yes. Yes.	Yes. Yes.		No Yes.	No	I, D
BlackhawkL6	Speedster	2625	1971	21.6 00		4	Wood.	Alum.		Leather.	RCF	Pyrox		A	Yes.	Yes.	Yes.	Yes.	Yes.	Yes. No	No	Yes. Yes.	Yes.	I,S,T,
	Speedster	2585 2585	1271	31x6.00 31x6.00		2	Wood.	Steel Alum.	Steel.	Broad Leather	Im.Lea RCF	Pyrox		A	Yes. Yes.	Yes.	Yes.	Yes. Yes.	Yes.	Yes.	No	Yes.	Yes.	1,8,T,F
BlackhawkL8	Coupe	2345 1225	1271	31x6.00 31x6.00 31x6.00 30x5.50		2	Wood. M&W.	Steel.	Steel	Broad	Im.Lea.	Pyrox	1	A A	Yes. No	Yes. Yes.	Yes.	Yes. No	Yes. No	Yes.	No	Yes.		I,S,TF I, S
Buick 116	Sedan	1220	1453	30x5.50		2	M&W.	Steel	Steel	Mohair		Pyrox	1	A	No.	Yes.	Yes. Yes.	No	No.	No Yes.	No	No	No	I, S, D.
Buick 121	Spt. Roadster. C. C. Sedan	1450	12034	30x5.50 32x6.50 32x6.50 32x6.50		2	M&W. M&W.	Steel.	Steel	Mohair		Pyrox	1	A	No.	Yes.	Yes.	No.	Yes.	Yes.	No	No.	No	I, S, D.
Buick 129	Phaeton	1525 1865	1283	32x6.50 32x6.50		4	M&W. M&W.	Steel.	Steel.	Mohair		Pyrox		A		Yes. Yes.	Yes. Yes.	No	Yes. Yes.	Yes. Yes.	No	No	No	I, S. D.
Cadillac341B	Phaeton	3450	140	7.00x20	4725	4	Wood.	Steel		Leather	Optional	Pyrox	1	A	Yes.	Yes.	Yes. Yes.	Yes.	Yes. Yes.	Yes.	No	Yes. Yes.	Yes. Yes.	I
Chandler 65	Town Sedan		109	7.00x20 29x5.00	2540	4	Wood.	Steel.	Steel	M or B Leather	Optional Fabric	Pyrox	1	A	No.		Yes.	No.	Yes.	Yes.	No	No	No	Ĭ
Chandler Royal 75	Sedan	895 1295	109	29x5.00 29x5.50		4	Wood.	Steel.	Steel	Mohair.	Fabric			A	No.		Yes.	No	Yes. Yes.	Yes.	No	No	No	I, D
ChandlerBig 6	Met. Sedan	1525	124	32x6.00	3800	4	Wood.	Steel.	Steel	Mohair	Fabric	Pyrox	1	A	No.		Yes. Yes.	No	Yes.	Yes. Yes.	No Yes.	Yes. Yes.	No	I, D
ChandlerRoyal 85 Chevrolet	Touring		107	32x6.00 20x4.50		4	Wood.	Steel		Mohair Leather	Fab.Lea	Pyrox.	1	A D			Yes.		Yes.	100.				I, S
	Coach		107 1731	20x4.50 5.50x18	2500 2770	4	Wood.	Steel.	Steel	Corduroy Leather	Fab.Lea Fabric			D	No.	Yes	Yes.	No.	Yes.	Yes.	No.	No.	No.	I, S, D I, S, F
Chrysler 65	Sedan	1065	1731	[5.50x18	2900	2	Wood. Wood.	Steel.	Steel	Mohair.	RCF Fabric	Pyrox	1	A A	No.	Yes.	Yes.	No.	No. Yes	Yes.	No	No	No	I,S,D,F
Chrysler75	Royal Sed	1535	1851	6.00x18 6.00x18	3410	4	Wood.	Steel.	Steel	Mohair.	Py-Fa	Pyrox.		A		. Yes.	Yes.		Yes.	Yes.	No	Yes.	No.	I,T,D,I
Chrysler Imp. 80	Spt. Phaeton.		1911 1911	7.00x18 7.00x18		4	Wood.	Steel.		Leather Mohair	Fabric Py-Fa	Pyrox.	i	A	Yes	Yes.	Yes.		Yes.	Yes.	No.	Yes.	Yes.	I, T, F I,T,D,I
CunninghamV-8	Touring		132	32x6.75		4									Yes		Yes.		Yes.	Yes.	No	Yes.	Yes.	
De Sote	Enc. Dr. Lim.		132 169‡	32x6.75 5.00x19	2445	4	M&W.	Steel.		Leather.		Pyrox		A	No.			No.	No.	Yes.	No	No.	No.	I
	Sedan Phaeton		169‡ 112	5.00x19 29x5.50	2580	2	M&W. Steel.	Steel.	. Steel	Velour Leather	Fabric.	Pyrox.	i	A	No. Yes			No.		Yes.	No	No	No	I, D
Dodge BrosSix	Sedan	995	112	29x5.50		4	Steel.	Steel.	Steel	Mohair	Fabric	Pyrox	. 1		Yes	Yes.	Yes.	No.	Yes.	Yes.	No	Yes. Yes.	No	I, D
Dodge Bros. Senior 6 du Pont E	Sedan	2800	120 125	31x6.00 32x6.20	3850	4	M&W. M&W.	Steel. Alum.	. Fabric.		Fabric	Pyrox.		A	Yes	. Yes	Yes.	Yes.	Yes	Yes.	No.	Yes.	Yes.	
	Spt. Phaeton.	3200 4560		32x6.20 32x6.50	3850	4	M&W.	Alum.	. Alum	Broad	RCF	Pyrox.		A B	Yes Yes						No.	Yes. Yes.	Yes. Yes.	D
du Pent	Club Sedan	4360	141	32x6.50	4400	1.,	MAN	Steel				Pyrox.		A	Yes No.	. Yes		No.			No	Yes.	Yes.	D
Durant40	Coach.		107 107	28x4.75 28x4.75		2	M&W. M&W.	Steel.	Steel			Pyrox	. 1	A	No.		Yes							D
Durant60	Coach.		109	29x5.00 29x5.00		4 2						Pyrox.	1	A				141						
Durant	Sedan	975	112	29x5.00		4						Pyrox.		A	Yes		Yes		Yes	Yes.				D
Durant	Sedan	1075	119	29x5.50 29x5.00)	4	Wood.	Steel.		Leather.	RCF	Pyrox.		A	Yes Yes	. Yes		Yes	Yes	Yes		No.		
	Club Sedan Touring	1095	117	29x5.00 30x5.50		4	Wood.	Steel.	Fabric.		RCF	Pyrox	1	A								No.		
Elcar95	Club Sedan	1395	123	30x5.50)	4	Wood.	. Steel	. Fabric.	Velour	. RCF	. Pyrox		A.,	Yes	. Yes	. Yes	. Yes	. Yes	. Yes	No.			F, I, E
Elcar96	Roadster	1665	123 123	30x5 .50 30x5 .50)	2	Wood.	Steel.	Fabric.		RCF.	Pyrox.		A.	Yes	. Yes	. Yes	. Yes	. Yes	Yes.	Yes.	No.	Yes.	F, I, D
Elcar120	Roadster Coupe	2265	127	6.50x20 6.50x20		2	Wood.	Steel	. Fabric.	Velmo	. Im.Lea. RCF	Pyrox.		A. A.										F, I, I
	Club Sedan Phaeton	860	109	20x4.73 2 30x5.00	2535	2	M&W.	Steel.	. Steel	Velour		. Pyrox		A.	No.	Yes	. Yes	No.	No.	. Yes	No.	No.		I, T, I
Essex Challenger	Coach	695	1101	2 30x5.00)	2	Metal. Metal.	. Steel	Steel.	Velour.	Im.Lea.	. Pyrox.	. 1	A.	Yes	. Yes	. Yes	No.	. Yes	Yes	No.	No.	No.	I, D
Ford	Phaeton 2-Door Sedan.			2 30x4 . 50 2 30x4 . 50		4	M&W.		Steel	Wo. Fa.	RCF	Pyrox.			No.	Yes			No.		No.		No.	D, I
Franklin 130 Franklin 135	Sedan	2180	120 5 125	31x6.00)		M&W. M&W.	. Steel	Steel.	M or B M or B	RCF	Pyrox.			Yes	. Yes					Yes. Yes.			I, D
Franklin 137	Spt. Touring	2785	132	31x6.50 31x6.50)	4	M&W.	. Steel		Leather.	. Fabric	. Pyrox.			Yes	. Yes								I
	Spt. Sedan Brougham		5 120 5 125	29x5.50 31x6.00			Wood.	Steel.	Steel.	Optional.		Pyrox		A.	Yes	Yes Yes		No.		. Yes	No.	. Yes	No.	I, D, I
Gardner130	Spt. Sedan	1998	5 130 5 112	30x6.50)	4	Wood. M&W.	Steel	Steel.	Leather.	. Py-Fa.	. Pyrox		I A.	. Yes		. Yes	No.	. Yes	. Yes		. Yes	Yes	I, D. I
Graham-Paige 612	Sedan	888	112	5.00x19 5.00x19	9	2	M&W.	. Steel.	Steel.	Mohair.		Pyrox.		A.	. No	Yes	. Yes	No.	. Yes	. Yes	No.	No.	No.	. I, D, S
Graham-Paige 615	Sedan	115	5 115 5 115	5.50x19		. 2	M&W. M&W.	Steel.	Steel.	Mohair.		Pyrox.		I A.		Yes				. Yes	No.	. Yes	No.	I, S. I, D, S
Graham-Paige621	Touring	186	5 121 5 121	6.00x1	9	. 4	M&W. M&W.		Steel.	Leather . Mohair.		. Pyrox.	. 3	IA.	. No	Yes	. Yes	No.		. Yes		. Yes	Yes	I, S
Graham-Paige 827	Touring	219	5 127	6.00x1 6.50x1	9	. 4	M&W.	Steel		Leather.		Pyrox.		I A.	. No	Yes	. Yes	No.	. Yes	Yes	No.	. Yes	. Yes	I, S
Graham-Paige 837	(Seuan	192	5 127 5 137	6.50x1 6.50x1	9	. 4	M&W. M&W.		Steel.	Mohair.		Pyrox.		I A.	No No	Yes	Yes		Yes		No.			
Hudson 122	Phaeton	1350	0 122	31x6.0	0	. 4	Steel.	. Steel.		. Varies	Im.Lea.	. Pyrox		. A.	. Yes	s. Yes	Yes	. No	Yes	. Yes	No.	No.	No.	
Hudson 139	Spt. Phaeton.		5 122 139	31x6.0	0	. 2	Steel.	Steel.	Steel.	Varies	Im.Lea.	Pyrox.		A.	1 69	Yes	. Yes	. No	Yes	. Yes	No.	No.	. No.	. I
	Spt. Sedan Phaeton	1850	0 139 5 114	31x6.0 29x5.5	0		M&W	Steel		Leather.		Pyrox.		A	No	Yes	Yes Yes			Yes				I, D.
Hupmobile A	Sedan	. 134	5 114	29x5.5	0 2975	2	M&W.	. Steel.	Steel.	Mohair.		. Pyrox		. A.	. No	Yes	. Yes	. No	No	Yes	No.	. No.	No.	. I, D.
Hupmobile M	Phaeton	182	5 120 5 120	31x6.0 31x6.0	0 3385	2	M&W M&W	. Steel.	Steel.	. Leather . Mohair.		Pyrox.		. A.	. No	Yes	s. Yes	. No	Yes	s. Yes	No.	. Yes	No.	. I, D.
	Touring		. 116	28x5.5	0	4	M&W	Steel.		. Leather.		Pyrox.	1	A	1	Vos	Ves	No	. !Yes	1 Ves	INO	INO	INO	I, F.

ABRREVIATIONS:

*—Italics denote shipping weight. ‡—Overall length. °—Others furnished. A—Artillery. A & S—Aluminum and steel. Alum—Aluminum

B—Wire. (Wheels)
Broad—Broadcloth.
C—Optional. (Wheels)
Cord—Corduroy.
D—Disk (wheels).
D—Door (lock).
En Py—Enamel & Pyroxylin.
F—Fedeo Numbering.

Fab Lea—Fabric Leather.
G—Gearset.
I—Ignition.
Im. Lea—Imitation Leather
M or B—Mohair or Broadcloth
M&W—Metal and Wood.
Mo Ve—Mohair-Velour
Mo Vel—Mohair-Velvet.

O—Optional. Opt—Optional.
Py-Fa—Pyroxylin Fabric.
Pyrox—Pyroxylin Finish.
RCF—Rubber Coated Fabric.
S—Steering Wheel.
T—Spare Tire.
Wo-Fa—Worsted Fabric.

D D

D. D. S. S. S. S.

S... S...

F..

ment Specifications

ced 4-5 passenger open and closed bodies fitted on each chassis



	•	GENE	RAL						ı	BODY								E	QUII	MEN	T			
					ete				Coverin	g Materia	s		Pla			ck.	-							4
MAKE & MODEL OF CHASSIS	Body Model	Price (\$)	Wheelbase (Ins.)	Tire Size (Ins.)	Weight of Complete	Number of Doors	Body Framework Material	Body Panels	Rear Upper Quarter Sections	Upholstery	Төр	Type of Finish	Type of Windshield	Type of Wheels	Bumper	Snubbers or Shock Absorbers Fitted?	Windshield Wiper	Trunk Rack	Engine Thermometer	Dash Gas, Gage	Car Heater	Cigar Lighter or Smoking Set	Clock	Locks and Thefi
ordanG	Sportster		125	30x6.00			M&W.	Steel.		Leather		Pyrox.		A		Yes.	Yes.		Yes.	Yes.		Yes.	Yes.	I
	SedanBrougham	1595	125	30x6.00 30x6.00		4	M&W Wood	Steel.	Fabric.	Broad Mohair		Pyrox.		A	Yes.	Yes. Yes.	Yes.	Yes.	Yes.	Yes. Yes.	No.	Yes.	Yes.	I, D.
	Tourster	2195	125	30x6.00	3495		Wood.	Steel.		Leather		Pyrox.	. 1	A	Yes.	Yes.	Yes.	Yes.	Yes.	Yes.	No.	Yes.	Yes.	I
issel8-95	Bro'm Sed Tourster	1995 3275		30x6.00 30x6.75	3495	4	Wood	Steel.	Fabric	Mohair Leather		Pyrox.		A B	Yes. Yes.	Yes.	Yes. Yes.	Yes. Yes.	Yes.		Yes.	Yes. Yes.	Yes.	I,D.
issel8-126	Bro'm. All Yr.	3185	132	30x6.75	3990	2.	Wood.	Steel.	Fabric.	Optional	2841444	Pyrox		B	Yes.	Yes.	Yes.	Yes.	Yes.	Yes.	Yes.	Yes.	Yes.	I, D.
Salle328	Phaeton Family Sed	2295 2450		6.50x19 6.50x19		2	Wood.	Steel	Steel	Leather Broad	Optional Optional	Pyrox.		A	Yes. Yes.	Yes.	Yes. Yes.	No Yes.	Yes.		No Yes.	Yes. Yes.	Yes. Yes.	I, D.
incoln8	Spt. Phaeton.	4650	136	32x6.75	4910	4	M&W.	Alum.		Leather	Fabric	Pyrox.		B	Yes.	Yes.	Yes.	Yes.	No.	Yes.	No	Yes. Yes.	Yes. Yes.	I, S I, S,
	Phaeton	4800 3350		32x6.75 30x6.50		4	M&W Wood.	Alum. Steel	Alum	Optional.	Im.Lea	Pyrox		A	Yes. Yes.	Yes. Yes.	Yes. Yes.	No Yes.	Yes.	Yes.	No	Yes.	Yes.	G
ocomobile 88	Sedan	2650	130	30x6.50		4	Wood.	Steel	Steel	*	D. L.			A	Yes.	Yes.	Yes.	Yes.	Yes.	Yes.	No	Yes. Yes.	Yes.	G, D
ocomobile8-80	Spt. Touring.	3100 2650		32x6.00 32x6.00	3950	4	Wood.	Steel.	Steel	Leather Broad	RCF			B	Yes. Yes.	Yes. Yes.	Yes. Yes.	No.	Yes.	Yes.	No.	Yes.	Yes.	D
ocomobile 48	Sportif	8	142 142	33x6.75	5030 5600	4	Wood.	Alum.	Alum	Leather Broad	Py-Fa. Leather			A	Yes.	Yes. Yes.	Yes. Yes.	No.	No.	No.	No.	No Yes.	Yes. Yes.	I, T D, I,
ocomobile 90	Vic. Sedan	5900		33x6.75	4475	4	Wood.	Alum.	Alum.	Leather	Fabric		. 1	A	Yes.	Yes.	Yes.	Yes.	Yes.	Yes.	No.	Yes.	Yes.	
	Vic. Sedan Sedan	7300 1465		33x6.75 29x5.50	4842 2806	4	Wood.	Alum. Steel.	. Steel	Broad	Leather . Im.Lea.	Pyrox.	- 2	A	Yes.	Yes.	Yes.	Yes.	Yes. Yes.	No.	No.	Yes. Yes.	Yes.	D
Aarmon	Sedan	1965	120	31x6.00	3182		M&W.	Steel	Steel	Broad	Im.Lea	Pyrox		A	No.		Yes.	No.	Yes.	Yes.	No.	Yes.	Yes.	I,T,E
Aoon6-72	Sedan	1395	120 1121/	29x5.50 30x5.00		4	M&W. M&W.	Steel.	Steel	Mohair	RCF	Pyrox		A	No Yes.	Yes. Yes.	Yes.	No.	Yes.		No.	No	No	G.I.T
lashStd. 6	Sedan	885	1121	30x5.00	2625	2	M&W.	Steel	Steel	Velour	RCF	Pyrox	. 1	C	Yes.	Yes.	Yes.	No.	Yes.	Yes.	No.	No	No	G,I,T
iashSpec. 6	Phaeton	1250 1260	116	29x5.50 29x5.50		2	M&W. M&W.	Steel	Steel	Leather Mohair.	RCF	Pyrox.		C	Yes.	Yes. Yes.	Yes.	No. Yes.	Yes.		No.	No Yes.	No	G,I,
ashAdv. 6	Sedan	1480	121	32x6.00	3760	2	M&W.	Steel	Steel	Mohair.	RCF	Pyrox		C	Yes.	Yes.	Yes.	Yes.	Yes.	Yes.	No.	Yes.	No	G,I,T
aklandAA-6	Spt. Phaeton Sedan	1145 1145		29x5.50 29x5.50	3070	2	M&W. M&W.	Steel.	Steel	Leather Mohair.	RCF	Pyrox.		A	No	Yes.	Yes. Yes.	No.				No.	No	G
Idsmobile F-29	Spt. Touring.	945	1131	28x5.00		. 4	M&W.	Steel.	Fabric.	Leather	Fabric	Pyrox.		I A	Yes.	Yes.	Yes.		Yes. Yes			No Yes.	No	Di
IdsmobileSpec.	Spt. Phaeton.			28x5.00 28x5.00		2	M&W. M&W.	Steel.	Steel	Mohair.	RCF	Pyrox.		A	Yes.	Yes.	Yes.	Yes.	Yes	Yes.	No.	No.	No	I
	Sedan Phaeton	950 1075	1131	28x5.00 28x5.00		. 2	M&W. M&W.	Steel.	Steel Fabric	Mohair Leather	RCF	Pyrox.		B.	Yes. Yes.	Yes. Yes.	Yes. Yes.	Yes.			No.	No	No.	D, I
Oldsmobile . DeLuxe	Sedan	1105	1131	6 28x5 M		4	M&W. M&W.	Steel.	Steel	Mohair. Im. Lea	RCF	Pyrox.		B. A.	Yes.	Yes. Yes.	Yes. Yes.	Yes.	Yes	Yes		No	No	D, I.
overland Whip.96-A	Coach	535	1031	28x4.78 28x4.78 29x5.00		2	M&W.	Steel.	Steel.	Corduroy		Pyrox.		. A	No.	Yes.	Yes.	No.	No.	No.	No.	No	No	I, D
Overland Whip.98-A	Coach.	635	1121	2 29x5.00 2 29x5.00		. 2	M&W. M&W.	Steel.	Steel	Im. Lea. Velour.		Pyrox		A	No.	Yes. Yes.	Yes. Yes.	No.				No	No	I, D
ackard626	Sedan	2435	126	32x6.00	4185	4	M&W.	Steel.	Steel	Broad		Pyrox		. D.	Yes.	Yes.	Yes.	No.	Yes.	Yes	No.	Yes.		I, D.
Packard633	Phaeton Club Sedan	2535 2735	133	32x7.00 32x7.00	3905 4240	4	M&W. M&W.	Steel.	Steel.	Im. Lea. Broad		Pyrox.	11	D	Yes.	Yes.	Yes. Yes.	No.		Yes. Yes.			Yes. Yes.	I, D
Packard640	Phaeton	3175	140	32x7.00	4370	4	M&W.	Steel		Im.Lea.		Pyrox.		D	Yes.	Yes.	Yes. Yes.		Yes. Yes	Yes		Yes.	Yes. Yes.	I. D
Packard 645	Club Sedan Phaeton		140	32x7.00 32x7.00		4	M&W. M&W.	Steel.	Steel	Im. Lea		Pyrox.		. D	Yes. Yes.	Yes.	Yes		Yes	Yes		Yes.	Yes.	Ĭ
	Roadster	5735	145 116	32x7.00 29x5.2			M&W. M&W.	Steel.	. Steel	Broad Leather.		Pyrox.		D	Yes.	Yes.	Yes. Yes.	No.	Yes. Yes			Yes.	Yes.	I, S.
Peerless6-61	Sedan		116	29x5.2	5	2	M&W.	Steel	Steel	Velour		Pyrox.		. A	No.	Yes.	Yes.	No.	Yes.	Yes.	No.	No.	No	D, I,
Peerless 6-81	Phaeton	1540	116	29x5.50 29x5.50	3135		M&W. M&W.	Steel.		Leather		Pyrox.		A	Yes. Yes.		Yes.					No Yes.	Yes. Yes.	I, D.
Peerless6-91	Touring	1795	120	31x6.0)	. 4						Pyrox.			Yes.	Yes.							Van	D
Peerless. Str. Eight	Sedan		120	31x6.00		4						Pyrox.		C. B.	Yes.		Yes Yes					Yes.	Yes.	I, D
Pierce-Arrow133	Spt. Touring.	2975	133	19x6.5)		M&W.	Steel.	C41	Leather.		Pyrox.		. A	Yes.	Yes.	Yes Yes					Yes. Yes.	Yes. Yes.	I, S. I, S,
Plymouth	Brougham		133 169‡	19x6.50 4.75x20		4	M&W. M&W.	Steel.	. Steel.	Broad Leather.		Pyrox.		A	Yes.	Yes.	No.	No.	No.	No.	No.	No	No.	Ĭ
	SedanSpt. Phaeton.		169‡ 110	4.75x2 29x5.0		. 2	M&W. M&W.	Steel.	Steel.	Velour Leather.		Pyrox.		A	No.	Yes.	No.	No.	No.	No.	No.		No	I, D.
PontiacSix	Sedan	748	110	29x5.0	0	12	M&W.	. Steel	Steel.	Corduroy		Pyrox.		. A.	No		Ves	No.	No.	. Yes	No.	No.	No.	I, D.
ReoThe Master	Brougham	1595	121	30x6.20 30x6.0		. 2	M&W. M&W.		Steel.	Mohair.		Pyrox.		A	Yes.	Yes.	Yes Yes	No. Yes	. No.	. Yes	No.	No.	No.	D
Roamer8-78	Sedan	1798	120	32x6.0	0 3440	2				Mohair.		Pyrox.		. C.	No.		Yes	No.		. Yes	. Yes	No.	No.	D
	Sedan Tourer	1988	126 136	32x6.0 32x6.2	0 3450 0 3650	2				Mohair.		Pyrox.		A. C.	No.		Yes Yes		. Yes	. Yes	No.	No.	No.	
	Sedan	. 298	136	32x6.2	0 3880	4				Mohair.	D. E.	Pyrox.		. C.	No.		Yes						No.	D I, D
Stearns-Kni. M6-80 Stearns-Kni. N6-80			126 134	32x6.0 32x6.2	0 4098 $0 4053$	2	Wood.	Steel.	Steel	Broad	Py-Fa. Py-Fa.	Pyrox.		1 A.	Yes Yes		Yes Yes				. Yes	No.	No.	
Stearns-Kni. H8-90	Sedan	. 5500	137	32x6.7	5 5108	4	Wood.	Steel	. Steel	Broad	Py-Fa.	Pyrox.		1 A.	Yes	Yes.							Yes.	G I,S,7
Studebaker Dict.	(Danal Danal		113	20x5.5 19x5.5		. 2	M&W. M&W.	Steel.	Steel.			Pyrox.		. A. B.	No.				Yes	. Yes	No.	. Yes.	Yes.	I, S
Studebaker Com.6 Studebaker Com. 8	Sedan	. 137	5 120	19.5.5	0	. 4	M&W.	. Steel.	Steel			Pyrox.		. A. A.	No.	. Yes				Yes Yes				1,8,7
Studebaker, Pres. 125	(Dandatan		5 120 5 125	19x5.5 20x6.0	0	2	M&W.		Steel.			Pyrox.		. B.	No.	. Yes		No.	. Yes	Yes	No.	. Yes	Yes.	I.S.7
Studebaker.Pres.125 Studebaker.Pres.135	Sedan	178	5 125 0 135	20x6.0	0	. 4	M&W. M&W.	. Steel.	Steel			Pyrox.		. A. B.	No.		Yes	No.					Yes	I,S,
Stutz	Speedster	363	5 1343	19x6.5 2 32x6.5	0	. 4	Wood.	. Alum.		B or L.	RCF	. Pyrox.		. A.	. Yes	Yes	Yes	. Yes	Yes	Yes	No.	. Yes	Yes.	I,S,
	Coupe	339		32x6.5 32x6.0	0	. 2	Wood.	. Steel.	Steel.	Broad Leather.	Im.Lea.	Pyrox.		. A.	Yes No.								. Yes No.	I,S,
Willys-Kni, Great 6	Touring Sedan	. 199	126	32x6.0	0 4003		M&W.		Steel.	V or B		. Pyrox.		. A.	No.	Yes	Yes	. No	Yes	Yes	No.	. Yes	No.	I, D
Willys-Kni70B	/m	104	5 1123	2 18x5.5 2 18x5.5	0	. 4	M&W. M&W.	. Steel.		Velvet		Pyrox.		. B.	No.				Yes	. Yes	No.	No.	.No.	. I. D
Windsor. Wh. Pr. 8-82	Phaeton	. 184	5 1251	2 31x6.0	0	. 4						. Pyrox.		. A.					. Yes	. Yes	No.	.No.	No.	. F
	Sedan Phaeton	. 184	5 1253	2 31x6.0 2 31x6.5	0	i		* * * * * *				Pyrox.		. A.	1				Yes	. Yes	No.	No.	.No.	F, E
Windsor. Wh. Pr. 8-92	Sedan	199	1051	2 31x6.5	0	. 4						Pyrox.		A.		1	1.	1	Vos	Vos	No	No	No	FI

ABBREVIATIONS:

*—Italics denote shipping weight ‡—Overall length. °—Others furnished. A—Artillery. A & S—Aluminum and steel. Alum—Aluminum.

B—Wire. (Wheels)
Broad—Broadcloth.
C—Optional. (Wheels)
Cord—Corduroy.
D—Disk (wheels).
D—Door (lock).
En Py—Enamel & Pyroxylin.
F—Fedeo Numbering.

Fab Lea—Fabric Leather.
G—Gearset.
I—Ignition.
Im. Lea—Imitation Leather
M er B—Mohair or Broadcloth
M&W—Metal and Wood.
Mo Ve—Mohair-Velour
Mo Vel—Mohair-Velvet.

O-Optional. Opt-Optional.
Py-Fa-Pyroxylin Fabric.
Pyrox-Pyroxylin Finish.
RCF-Rubber Coated Fabric.
S-Stering Wheel.
T-Spare Tire.
Wo-Fa-Worsted Fabric.

British Passenger Car Chassis

		February 23, 1929
	Chassis Weight (Lb.)	1300 1400 11400 11450 11450 11450 11450 11450 11450 11450 11880 11
	Wheels Type	Disk. Wire. Wire. Disk. Wire. Disk. Wire. Disk. Wire. Disk. Wire. Disk. Wire.
	Steering Gear Type	Co.
S	4-Wheel Operation	DDW DDW DDW DDW DDW DDW DDW DDW
BRAKES	Foot	
	bnsH	I Bw
SPRINGS	Rear	
SPR	Front	
	Torque Taken By	20000000000000000000000000000000000000
3	Propulsion Taken By	888884141414141414141414141414141414141
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TRANSMISSION	Location Speeds	S. S
IRANS	Clutch Type	0.00
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	Fuel Feed	
FUEL		
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OIL PRES- SURE	Lb.	Spl. 25 above 20 abov
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	Cylinders and Crankcase	2
	Valve Lecation	**************************************
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	Tires (Ins.)	28x 5 5 5 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
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	NAME	A. B. C. A. C. C

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2 4 2 4 2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	Sp—Spur Gears S.P—Single Plate S.P—Single Plate Spinships Sp—Spinships Sp—Spinships Se—Spinships Se—Structure Structure T.A—Torque Arm T.A—Torque Tube T.A—Torque Tube
\$	
RR	M.D.—Multiple Dry Plate Met—Metal OH—Optional OH—Overhead OH—Planetary R—Racht Hand RAC Unit with Rear Axle R.R.—Racht Hand R.R.—Racht Hand S.S.A.—Steel and Aluminum S.S.A.—Steel and Aluminum S.H.—Sheel and Aluminum S.H.—Sherier Valves S.H.—Sherier Valves S.H.—Spiral Bevel
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	Engine Rear V Transm Four W Side ic & one ing ing ing refer Fle
HERE AND COLOUR AND	Eng—Unit with Engine E.R.w—External Rear Wheels E.T.—External Transmission E.F.w—External Pronumission E.F.w—External Pronumission F.—In Head and Side Fab.—Fabric on eneral F.F.—Cone fabric & one metal F.F.—Simi-doading S.F.—Simi-doading S.F.—Friction Disk Transmission F.—Friction Disk Transmission Fuel—Oil mixed with fuel
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2 75x 102 6 75x 120 6 72x 120 6 72x 120 6 72x 120 8 78 7x 114 6 105x 120 6 605x 100 6 605x 100	Cant—Cantilever CC—In Crankeuse CC—In Crankeuse CI—Claude CI—Coast Inc Co—Cone Cone DP—Dust Plate Methods Meth
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Jovett Ligonda Ligonda Ligonda Ligonda Ligonda Ligonda Lanchester Marenda Marenda Morris Morr	ABBREVIATIONS: A—Main Bearing (Oil System) Ans—Amac B—Bastery B—Connecting Rods (Oil System) B—Connecting Rods C—Central C—Cambadt (Oil System) Ch—Chain C—Cambadt (Oil System)

Continental Passenger Cars

		Standard Wheels	PARDAMAPA MDDAMAMADAMDDD-DDDDDDDDAMAMADADDAMAMAPADAMAMAPADAMAMAMADDAMAMAMADAMAMAMAM
		Steering	WWW. WWW. WWW. WWW. WWW. WWW. WWW. WWW
EAR		Operation	Macch Mech Mech Mech Mech Mech Mech Mech M
RUNNING GEAR	Brakes	Foot	
RUNN		busH	机机厂产产品基础机械机械通过和电压电阻电阻电阻电阻电阻电阻电阻电阻电阻电阻电阻电阻电压电压产产产产产产产品
	ng s	Rear	<u> </u>
	Springs	Juori	
		Torque Taken By	
	-	Propulsion Taken By	
		Gear Ratio	re der reger re rente de reger en en de de de la reger de reger reger reger de reger de reger de la re
SSION		Prire Drive	3&\$
TRANSMISSION		Universal Joints	The part of the pa
TR	set	Position of Lever	ಕರ್ಪರದರ್ಭದ ರವ್ಯದ ರವ್ಯದ ರವ್ಯದ ರವ್ಯದ ರವ್ಯದ ಕ್ಷಣೆಗಳ ಕ್ಷಣೆಗಳ ಕ್ಷಣೆಗಳ ಕ್ಷಣೆಗಳ ಕ್ಷಣೆಗಳ ಕ್ಷಣೆಗಳ ಕ್ಷಣೆಗಳ ಕ್ಷಣೆಗಳ ಕ್ಷಣೆಗಳ
	Gearse	Gearset Location No. of Forward Speeds	Danger of the part
		Clutch Type	
=	-	Voltage	222222229999999222222222222222222222222
ELECTRICAL	_	Current Source	
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	-	Fuel Feed	Стат. Ста
	Fuel	Carburetor Make	Solex.
		Lubrication	habbe be
		Cooling System	A Property of the state of the
	shaft	Drive	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
	Cam	Location	50000000000000000000000000000000000000
ENGINE	_	Piston Material	ZEFER DE SE
ENG	lock	Cylind's Cast in One B Cylinders and Cyshcase	
		Valves Arrangement.	3.41.11.11.11.11.11.11.11.11.11.11.11.11.
	881	Compression Ratio	සං ස
	-	Piston Displacement Cubic Inches	122 122 122 122 122 122 122 122 122 122
		Bore & Stroke inches	2. 2. 35, 48, 43, 33, 43, 44, 47, 47, 47, 47, 47, 47, 47, 47, 47
		Bore & Stroke mm.	66x110 65x 80 66x 96 66x 96 66x 96 66x 96 66x 105 66x 105 65x
		No. of Cylinders	
		Tires (mm. or ins.)	12.45 13.445 13.445 13.445 13.445 13.445 13.445 13.445 13.445 13.445 13.445 13.445 13.445 13.445 13.445 13.445 13.445 13.445 13.445 13.444 14.455 14.
		Wheelbase (Ins.) Tread (Ins.)	01010111111111111111111111111111111111
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Farman. 149 59 3477.30 6 100x150 3.9x5.9 430 4.2 31. 6 Sep. Al OH Bev. Pu. abe Zenith Vac. Duc. B. 12 MD. Eng. 4 C. I Met. Sp. 4.3 TT. TT. 12 El Cart. IR . IF. Servo . Alp.

	Vac—Vacuum Var—Vacuum Var—Vacuus Vet—Vaterus Wes—Wrie Wes—Wordinghouse Wos—Word and Nut Wo—Word and Nut Wes—Word and Sector WW—Word and Sector WW—Word and Sector X—Steev Value Z—Two Cycle ——Fitted with Supercharger ——1928 Specifications
**************************************	SIS—Steel Spoke Spe—Aluminum Piston with Cast Si—Straight Bevel Sis—Steam Steam—Stromberg Swi—Swinging Axie TA—Torque Am This—Thermo Syphon Tr.Can—Transverse Cantilever Trans—Transverse Cantilever Trans—Transverse
Eng. 4 C. 2 Met. Sp. 4 4 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	RA—Unit with Rear Axle RR—Robert Bosch Sche—Schobler Scir—Schobler Scir—Schulla Sup—Schutilla SL—Schutilla SL—Schutilla SL—Schutilla SL—Schutilla SL—Schutilla SP—Springs (Torque and Torque and Torqu
Vac. P.H.I. M. 12 SP. Vac. Saga. M. 6 Co. M. 12 SP. Vac. Saga. M. 6 Co. M. 12 SP. Vac. Delco. B. 12 SP. Vac. Co. Vac. RB. M. 6 Co. RB. Pres. SE. V. M. 12 SP. Vac. Delco. B. 12 SP. Vac. SE. V. M. 12 SP. Vac. SE. V. M. 12 SP. Vac. Delco. B. 12 SP. Vac. Delco. B. 12 SP. Vac. SE. V. M. 12 SP. Vac. SE. V. M. 12 SP. Vac. Delco. B. 12 SP. Vac. Delco. B. 12 SP. Vac. SE. V. M. 12 SP. Vac. Selmson. M. 12 SP. Vac.	Mar—Marelli MB—Magneto and Battery MB—Magneto and Battery MD—Multiple Disk Met—Metal Universals N-E—North East OH—Overhead Pin-Pinion Pin-Pinion Pin-Pinion Pin-Pinion Pin-Pinion Pin-Pinion Pin-Pinion Pin-Pinion Pin-Pinion Pinion Pini
CC Ch. Ths. abe Soles. CC Ch. Ph. abe Soles. CC Ch. Ph. abe Soles. CC Ph. Ths. abe Soles. CC Ch. Ths. abe Soles. C	Hyd-Hydraulic Hyp-Hypoid I-Valves in Reduct IF-Internal Front and IFT-Internal Front and ITT-Internal Transmission INT-Internal Transmission INT-INT-INT-INT-INT-INT-INT-INT-INT-INT-
244 4.8 2 2 1	EF-External Four Wheels En-Elliptic Eng-Unit with Engine ER-External Rear Wheels ET-External Transmission Ex-External Tra
18 51 288-5 25 4 70x105 2 75x4 12 118 51 288-5 25 4 70x105 2 75x4 12 118 51 288-5 25 4 70x105 2 75x4 12 118 51 288-5 25 4 70x105 2 75x4 12 134 57 23x6 5 4 6 6 8 2 7 2 3 4 5 2 2 2 2 2 2 2 2 2	Cab—Cable Can—Cantilever Can—Cantilever Charlesse Charlesse Ch—Cast Iron D—Disk De—Densk DM—Direct Mechanical DM—Direct Mechanical DM—Direct Mechanical DM—Direct Mechanical DM—Direct Mechanical DM—Direct Mechanical Eise—Fisemann
Frato. Frato. Frato. Frato. Guyot. Guyot. Guyot. Guyot. Guyot. Guyot. Harris Leon Laisne. Hispano. Hispano. Hispano. Hispano. Hispano. Hispano. Hispano. Hispano. Hotchkiss. Hotchiss. Hotchkiss. Hotchiss. Hotchiss. Hotchiss. Hotchiss. Hotchiss. Hotchiss. Hotchiss. Hispano. Hispano. Hispano. Hispano. Hotchiss. Hotchiss. Hotchiss. Hotchiss. Hotchiss. Hispano. Hotchiss.	ABBREVIATIONS A—Artillery B—Main Bearings AI—Aluminum B—Battery B—Battery Bearings Ber—Bevel Generings Ber—Bevel Gener C—Center C—Center C—Camshaft

Continental Passenger Cars—Continued

		Standard Wheels		48484848486600	884448800008888	DOPAPADDA C	HODO
		Steering		Rack. WWW. WWW. SSN. SSN. SSN. WWS. WWS. WWS		WWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWW	MAMA SS.SS.SS.SS.SS.SS.SS.SS.SS.SS.SS.SS.SS.
EAR		Operation		Hyd. Mech. Mech. Mech. Mech. Mech. Servo. Servo. Servo. Mech. Mech. Mech. Mech. Mech.	Meeb. Meeb.	Direct Servo. Mech. Servo. Servo. Mech. Mech.	Hyd Hyd Mech.
RUNNING GEAR	Brakes	Foot					E BEBE
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	sgu	Rear		Transcription of the control of the		ZZZZZZZ	
	Springs	Front			SZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZZ	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
		Torque Taken By		12111 33233111133	1112221112221111		S S S S S
		Propulsion Taken By		8821118888211188	1112221112222111		88888
		Gear Ratio		1. 6. 6. 6. 6. 6. 6. 6. 6. 6. 6. 6. 6. 6.	74000000000044044 74-00001-44	rorarrora-r o	272
SION		Final Drive		B	\$	3 : 1 : 1 : 1 : 1 : 1	8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
TRANSMISSION		stnivt fastovinU		Met. Fab. 1 Met. 1 Met. 2 Met. 2 Met. 2 Fab. 2 Fab. 2 Fab. 1 Met. 1 Met. 1 Met. 1 Met. 1 Met. 2 Fab. 3 Fab.	1 Met. 1 Met. 2 Met. 2 Met. 2 Met. 3 Met. 4 Met. 1 Met. 1 Met. 1 Met. 1 Met. 1 Met.	2 Met. 2 Met. 2 Fab. 2 Fab. 2 Fab. 2 Met. 1 Met. 1 Met.	2 Met. 2 Met. 2 Met. Met. Fab
TR	set	Position of Lever		800 400 44 400 44 44 400 400 000 000 000	00000000000000000000000000000000000000	ರರರರರರರಜ್ಞರರರ ರ	00000
	Gearsel	Gearset Location		Eng. Eng. Eng. Eng. Eng. Eng. Eng. Eng.	Eng. Sep. Sep. Sep. Eng. Eng. Eng. Eng. Eng.	English Sept.	Eng.
		Clutch Type		8888888888888888	SE S		S S S S
=	_	Voltage		000000000000000000000000000000000000000	222222222222222	9922222	9999
ELECTRICAL. SYSTEM		Current Source	p	<u> XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX</u>	<u>MXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX</u>		Mea B. B. M. B. M. B. B. M. B. B. M. B.
ELEC	94	Ignition System Ma	Cont	Nelco RBB RBB RBB Delco Delco BBB RBB RBB SEEV SEEV SEEV SeEA SeEA SeEA SeEA	Bosch. Luma. Luma. Luma. Luma. Bosch. Bosch. Delco. Delco. Delco. Bosch. Bosch.	Z No cicio Para Seciente No cicio Para Seciente No cicio Para Para Para Para Para Para Para Par	RB-M RB RB
	-	Fuel Feed		Vac. Grav. Grav. Vac. Vac. Vac. Vac. Vac. Vac. Vac. Vac	Grav. Vac. Vac. Vac. Vac. Vac. Vac. Vac. Vac	Vac Vac Grav Grav Grav Grav Vac Vac Vac Vac	Vac. Vac. Vac. Grav.
	Fuel	Carburetor Make	RENCH	Zenith. Solex. Solex. Solex. Solex. Solex. Viel. Zenith.	Zenith	Sthen Solex. Solex. Solex. Solex. Solex. Zenith. Zenit	Pallas. Strom Solex
		Lubrication (Pressure to)	FR	SypP.	abc cape cape cape cape cape cape cape cap	abocab	abce abce SpP
		Cooling System		Fu. 1768. 1768. 1768. 1768. 1768. 1768. 1768. 1768.		7 1762 88 88 88 88 88 88 88 88 88 88 88 88 88	Pu. Pu. Ths.
	mshaft	Drive		944444444444444	Service Control Helical Control Helical Control Helical Helical Control Helical Helica	22222555 55	4555 <u>H</u>
	3	Lecation	_	000000000000000000000000000000000000000	######################################	999999999999	88888
ENGINE	_	Crankcase Piston Material		A A A A A A A A A A A A A A A A A A A			2222
ENG	lock	Cylind's Cast in One B		0 4 4 0 0 0 0 4 4 0 4 0 0 0 0 4 4 0 0 0 0 0 4 4 0	6 Sep 6	400444000040 4	4 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
	881	Valve Arrangement.		2-11-11-11-12-22-21-	000040000CCC		3077
		Compression Ratio to		044440004444 10 000000 0177744 0000 100	0000000000044000000 000000000000000000		
		Piston Displacement Cubic Inches		177 173 185 185 185 185 195 195 195 195 195 195 195 195 195 19	106 106 1112 137 137 153 153 153 153 153 156		155 178 232 87
		Bore & Stroke inches		3 00x4 5 44x5 77 77 4x5 77 554 72 6535 74 9554 33 7544 12 7554 33 855 11 855 33 855 34 855 35 855 34 855 35 855 35 855 35 855 35 855 35 855 35 855 35 855 35 855 35 855 35	25x3.45 67x3.93 67x3.93 67x3.93 67x3.93 51x3.93 67x4.14 67x4.14 73x5.11 73x5.11 73x5.11	75x4 67x3 67x3 67x3 59x3 67x3 74x5 67x3 67x3 67x3 67x3 67x4	75x4 33 95x4 33 95x4 33 52x4 33
		Bere & Stroke mm.		74 6x111 3 6x26 2 4 70x126 2 5 70x126 2 5 70x126 2 7 70x10 2 7 70x106 2 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	65x88 65x88 2 68x10 2 68x10 68x10 68x10 68x10 2 68x10 2 72x10 2 8x113 8 65x10 65x10 2 65x10 65x10 8 65x10 65		70x110 75x110 75x110 75x110 64x110
		No. of Cylinders		0440000440400000044	00440404000000004		100004
		Fires (mm, or ins.)		15x5(720x15) 775x11,	29x5.25 28x5.25 28x5.25 28x5.77 32x6 730x130 30x6 30x6 30x6 30x6 30x6 14x50 14x50 14x50		30x5.77 30x5.77 32x6.00 730x130
		Wheelbase (Ins.) Tread (Ins.)		130 102 147 117 128 138 138 138 138 138 138 138 138 138 13	112 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	22222222222	112 53 123 53 131 56 109 45
		MAKE		Sizaire Suere Suere Suere Talbot Talbot Unic Unic Vernorel Vernorel Voisin Voisin D' Yrsan	Alfa Romeo Alfa Romeo Alfa Romeo Ansaldo Ansaldo Ansaldo Fat Fat Fat Fat Fat Isota Itala	A. D. K. F. N. Minerra. Minerra. Minerra. Magant. Nagant.	Adler "Standard 6". Adler "Stand 6S". Aga "4".

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888 88 88 88 88 88 88 88 88 88 88 88 88	thouse and Nut if yes if yes and Wheel and which w
Mech.	West—Westinghouse WN—Worm and Nut We—Worm Drive WS—Worm and Sector X—Sleeve Valve Z—Two Cycle "—Fritted with Superehart †—1928 Specifications
	West—Westing WN—Worm an WN—Worm Dr Ws—Worm Dr WS—Worm an WW—Worm a
机阻抗 化环环 化 化 化 化 化 化 化 化化化 医抗性线性性抗性性性性抗性 化化化性性性性性	
SES	2. 1/2 Elliptic In Cantilever
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\$	St—Straigh Bevel Ste—Steam Stom—Stromberg Sw—Swinging Axie TA—Torque Arm Tis—Thermo Syphon Tr.Can—Transverse Ci Tran—Transverse Ci Tran—Transverse Var—Various Viet—Various Viet—Various Viet—Various
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සියියි. සියියියි සියියියියියියියියියියියියියියි	ue and ear Axle) ressure ton with
2 Met. Z Fab. Z Met.	Radius Rods —Schebler Schifflis Schifflis Scharle Geov Valve Geove and Nut prings (Torque and Propulsion) piral Bree (Rear Axle) mide Pitale Splash with Pressure Stell Spoke Muminum Paton with Iron Skirte
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REB	MD—Multiple Disk Met—Metal (Universals) N-E—North East N—None OH—Overhead Pin—Pinion Prest.—Prematic Prest.—Prematic Pu-Paris Rhone Pu-Paris Rhone R—Right (Gearshift lever easton RA—Unit with Rear Azle RB—Robert Bosch
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The Property	Hyp—Hypoid I—Valves in Head IF—Internal Four Wheels IFT—Internal Front and IT—Internal Transmission III—Internal Transmission IR—Internal Front IR—Internal Rear Wheels Le—I.v. Head M—Magneto M—Magneto Magneto Mar—Magneto MB—Magneto and Batter
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	gine Wheels smission es es) Arque
	Eng—Unit with Engine ER—External Rear Wheels ER—External Transmission Ex—Expanding Shoe F—'Fr Head (Valves) Fab—Pabric Gau—Gaumont GA—Grouvelle and Arquembon Grav—Gravity H—Borizontal He & Ch—Helical Gear & Chain Hi—Helical Gear Hall—Helical Gear
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22.25	ANTI- 4 SOSTER
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6 30x5 25 6 30x5 25 6 30x5 25 6 30x5 25 6 30x5 25 6 32x6 6 33x6 75 6 33x6 75 6 33x6 75 7 26x4 40 7 26x4 40 8 30x5 77 7 26x4 40 8 30x5 77 7 26x4 40 8 30x5 77 8 30x5 77 8 30x5 77 8 30x5 77 8 30x5 77 8 30x6 75 8 30x6 75 8 30x6 75 8 30x6 75 8 30x6 75 8 30x6 75 8 30x6 77 8 30x6 70 8 3	TOCOCO A MANAGEMENT
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Audi "6" 110 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	ABBREVIATIONS A—Attillery A—Attillery A—Alos Duralumin Ap—Alos Duralumin B—Battery B—Sarbery Bev—Bred Gear Bev—Bred Gear Bev—Bred Gear C—Cealneral Front and External C—Camalatt; Cab—Cable,

Continental Passenger Cars—Continued

		AA KK G Wheelbase (Ins.)		Austro-DaimlerADR 138 Austro-Fiat	Graef & StiftSp5 144 Graef & StiftS3 145	Steyr. XX 124 Steyr. XII 118 Steyr. XVI 136 Steyr. SS 117	W.A.F. 8 Cyls. 147		Magotax118		Czechoslovakische Waffenwerke 104	Praga-Piccolo. 98 Praga-Alfa. 114 Praga-Mignon. 128 Praga-Grand 8. 135	Skoda HS 145 Skoda 110 116 Skoda 120 122 Skoda 360 134	Tatra 12 104 Tatra 30 109 Tatra 17 141	Walter4B 110	ABBREVIATIONS A—Artillery A—Artillery A—Altillery Al—Aluminum Alp—Aluminum Alp—Aluminum Be—Battery Be—Botel Gear Be—Lower Rod Bearings Be—Botel Gear Rear C—Center C—Center C—Camshaft
		Tread (Ins.)		53	57 32x6.75 57 32x6.75	50 775x145 50 775x145 57 32x6.20 52 30x5	53 780x150 54 860x160		56 730x130 56 29x5		44 24x4.75	43 715x115 49 29x5 53 32x6 53 32x6.2	57 33x5 51 775x145 51 775x145 55 895x135	47 27x4.75 51 13x45 53 32x6	51 14x45 55 16x50	
	_	No. of Cylinders		32x6.20 6 76x110 14x45 4 75x95	6.75 6 80x130 6.75 6 95x140	145 6 65x104 45 6 61.5x88 5.20 6 88x110 6 88x134	50 4 82x140 60 8 72x110		30 6 59x100 6 67x100		.75 2 80x100	15 4 55x 90 6 60x88 6 70x108 2 8 70x110	6 100x140 45 4 75x110 45 4 75x110 35 4 95x140	75 2 82x100 4 75x 95 6 70x100	4 70x108 6 70x108	Cant—Cantilever CC—Crankease CH—Chain CG—Coast Iron Co—Conc De—Dissa Iron Dempty Dempt
		Bore & & & & & & & & & & & & & & & & & & &		10 2.99x4.33	30 3.15x5.12 40 3.74x5.52	04 2.65x4.09 88 2.42x3.46 10 3.46x4.33 34 3.46x5.27	40 3.22x5.51 10 2.83x4.33		00 2.32x3.93 00 2.64x3.93		00 3.15x3.93	90 2.16x3.54 8 2.36x3.46 08 2.75x4.25 10 2.75x4.33	40 3.93x5.51 10 2.95x4.33 10 2.95x4.33 40 3.74x5.51	00 3.23x3.93 95 2.91x3.74 00 2.75x3.94	08 2.75x4.25 08 2.75x4.25	Cant—Cantilever CC—Crankease CC—Charkease CR—Chast Iron Co—Coast Iron Co
		Piston Displacement Cubic Inches		182.75	239 5 363 4	126 95.75 245 305 6.	1 131.64		3 91.55 3 128 5		61 4.	4 52.1 6 91.1 5 152.4 3 207	1 403 3 118.6 1 242	67 102.4 141 5	101.44	
		Compression Ratio to No. of Main Bearing Valve Arrangement		25 3 I	8 71.	8 6 2 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	3 L.		33 L.		2 4 N	2444 7777	2000	75 2 1. 95 2 1. 5 4 1.	75 3 L	Eng—Unit with Engine ER—External Rear Will ET—External Transmi ET—External Transmi ET—Expanding Shoe F—'F' Head (Valves) Fabric Gau—Gaumont Gau—Gaumont Gau—Gravity H—Horizontal He & Ch—Helled Gau Chain
ENGINE	оск	Cylind's Cast in One Bla Cylinders and Crankcase		6 Int 4 Sep	6 Int 6 Sep	Sep	4 Sep	1	6 Sep 6 Int		2 Sep.	8 8 8 8 8 8 8 8 9 9 9 9 9 9 9 9 9 9 9 9	6 X 8 8 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	1 Sep 6 Sep	4 Sep 8	Eng—Unit with Engine ER—External Rear Wheels ET—External Transmission Er—Expanding Shoe Fri—Prace Shoe Gau—Gaumont Gau—Gaumont Gra—Gravity Hell—Horizontal He & Ch—Helical Gear and Hell—Helical Gear
ш	2	Piston Material		Al. OH.	Al. OH.	ACCIA OH. OH.	CI CC.		CICC.		Al. N	8888 8888 8888 8888	AAAA GCCG	AAA	Spe. CC.	1
	Camshaft	Drive		Bev.	Ch	Ch. Spur.	Spur.		Spur		Z	Spur Spur Spur	Bev. 1 Heli Heli	Heli	Spur. 1	Hyd—Hydrau Hyd—Hydrau Hyd—Hydrau I—Valves in F IFI—Internal Is IFI—Internal Is IR—Internal Is III—Internal Is
		Cooling System		Pu abc. ThS ab.	Puat	Pu ak Pu ak Pu ak	Puab.		ThS abe.	_	Ths Pe	ThS ab. ThS abc Pu abc	Pu. abce Ths SpP Ths SpP Pu. SpP	Airab Airab Puab	ThS abce	Hyd—Hydraulic Hyp—Hydraulic Hyp—Hypoid Hyp—Hypoid Hyp—Hypoid Hyp—Linternal Front and Transmission Int—Internal Front and Int—Internal Rear Wheels Hypoid Hyp—Hypoid Hyp—Hyp Hyp—Hyp Hyp—Hyp Hyp—Hyp Hyp—Hyp Hyp Hyp—Hyp Hyp
		Lubrication (Pressure to)	1	: :	abce Zenith.	abcde. Pallas abcde. Pallas abcde. Pallas abcde. Pallas	WAF.	H	e Zeni	CZECHO-SLOVAKIAN	Petroil Zenith	C. Zenith.	abce Solex SpP Solex SpP Solex SpP Solex	abee Solex ab Zenith. abee Zenith.	abce. Zenith.	Hyd—Hydraulic Hyp—Hypoid I—Valves in Head IF—Internal Four Wheels IFT—Internal Four wheels IRT—Internal Rear Wheels IR—Internal Rear Wheels IR—Internal Transmission I—Internal Transmission I—Internal Transmission I—Internal Transmission I—II—Iternal Transmission I—II—Iternal Transmission I—III—Iternal Transmission I—III—Iternal Transmission I—IIII—Iternal Transmission I—IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
	Fuel	Carburetor Make	AUS	Zenith Vac	th Vac.	as Grav.	F Vac	NOH	Zenith Vac RB	HO.	th Grav	th. Grav. th. Grav. th. Vac.	C Vac.	th Grav. th Grav. th Vac.	th Vac.	MMB MAGE NAME NO NAME NAME NAME NAME NAME NAME NAME NAME
3"		Fuel Feed	TR	v. RB	RB	v. RBB.	RB	Y	RB	STO	v. RB.	v. RBB RBB RBB	Sein.	v. Sein v. RB	RB	MB—Magneto and Battery MD—Mutiple Disk Met—Metal (Universals) N-E—North East OH—Overhead Pin—Pinion Pin—Pinion Pin—Pinion Pin—Pinion Pin-Pinion Pin-Pinion Pin-Pinion Pin-Pinion Pinion
SYSTEM		Ignition System Mak	IAN	B.M.	MM	MMMM	MM	RIA	88	VAK	M	8888	MMM	M B	MM	and Ba Disk niversals sat tic hone
=		Voltage Clutch Type		12 SP.	12 SP.	12 SP. 12 MD. 12 MD. 12 MD.	6 MD.	Z	12 SP.	IAN	6 SP.	6 SP 12 MD 12 MD 12 MD	MD	6 MD. 12 MD. 12 Co.	12 SP. 12 SP.	
	3	Gearset Location		Eng	Sep.	Eng. Eng.	Eng.		Eng		Eng.	Eng. Eng.	Eng. Eng. Eng.	Eng Eng	Eng	RB—Robert Bosch RR—Radius Rods Scheb—Schebler Scin—Scintilla Sep—Separate Sparate Spar
T	Gearset	No. of Ferward Speeds Position of Lever		20	2,2	2000	2,2		20		3. C.	2444 2000	8444 \$000	222	4 4 C	RB—Robert Bosch RR—Radius Rods Schebler—Schebler Schaftla Signatur Signatur Signatur Signatur Signatur Sp—Springs (Torque Sp—Springs (Torque Sp—Springs (Hear Sp—Spring (Hear Sp—Splash with Press Sig—Sylash with Press
TRANSMISSION		universal Joints		2 Met	Met 2 Met	2 Fab. 2 Fab. Fab. Fab. Met			Met		Fab.	Fab. Met. Met	2 Met. 2 Fab. 2 Fab. 2 Fab.	None	Met	osch cods er lve d Nut (Toque a con)
NOIS	_	Final Drive		Sp5	Sp 3	S S S S S S S S S S S S S S S S S S S	\$ \$5.		Sp5		o	8888 0 0 0 0 0 0 0	\$ \$ \$ \$ \$ \$	8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	Sp 4	
	_	Gear Ratio		36 SwA. 63 RR.	7 TT.	8 RR. 8 RR. 46 TT.	1 TT 8		5 Sp		Sp	8 Sp. 45 TT. 62 TT. 62 TT.	T d d d	SwA. SwA. SwA.	6 TT.	Spc.—Aluminum Piston with Cast Tron Skirt Ste—Steam Steom—Stromberg Sw4—Swinging Axle TAS—Thermo Syphon Tris—Thermo Syphon Tr. Can—Transverse Lyz Trans—Transverse Cantilever Trans—Transverse Trans—Transverse Trans—Transverse Trans—Transverse Trans—Transverse Transverse
		Lordue Taken By		SwA	11	RR. TT.	TT		Sp		TT	TIT.	Sp. Sp. T.	SwA	TT	c—Aluminum P Lron Skirt Lron Skirt F—Straight Bevel F—Straight Bevel F—A Swinging An F—Torque Arm £ E—Transvers £ E—Transvers Z—Thermo Syp Cam—Transvers Cam—Transvers Cam—Transvers
	Springs	Front		12E	12EI	ZZZZ	200		12日		1/EI. 1	型型型型 2000000000000000000000000000000000	<u> </u>	Trans. 7	12El. 1	-Aluminum Piston with Cast Iron Skirt Straight Bevel Steam —Steam —Stromberg —Swinging Axle —Swinging Axle Torque Arm El—Transverse ½ Elliptic an—Transverse Cantilever in—Transverse Cantilever -Voque Tube —Vacque Tube
2	ngs	Кеат		Trans. 11	Cant II	Trans. II Trans. II Cant. II ½El. II	VzEl. E		12EI E		ДЕ . П	ZZZZZ ZZZZZ ZZZZZ	2222 2222 2333	Trans. II Trans. II Trans. II	12EL	44
RUNNING GEAR	Br	basH		IRIF	IR. IF	****	ER ET		ETIF		IRIR	RRRR	ET. IF	### ###	IRIF	Vict—Viet West—Wire West—W WN—Wo WS—Wo WS—Wo WS—Wo X—Sleeve ZC—Two *—Fitted
GEAR	Brakes	Foot		Servo. Mech.	Hyd	Servo Servo Servo Servo	r Mech.		Hyd		Mech.	Mech Hyd Hyd Hyd	Servo. Servo. Servo.	Mech. Mech.	Servo. Hyd	Viet—Victrix W—Wire West—Westinghouse WN—Worm and Nut Wo—Worm Drive SE—Worm Drive X—Sleeve Valve X—Sleeve Valve "—Fitted with Supercharger 1–1928 Specifications
	_	Operation Steering		ob. SN.	Yo. SN.	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	ch. WS.		SN		ch. WW	SNS.	00 00 00 00 00 00 00 00 00 00 00 00 00	SSN SN SN	vo. WW	house d Nut ive is Sector d Wheel e e Supercha
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American Agricultural Tractors



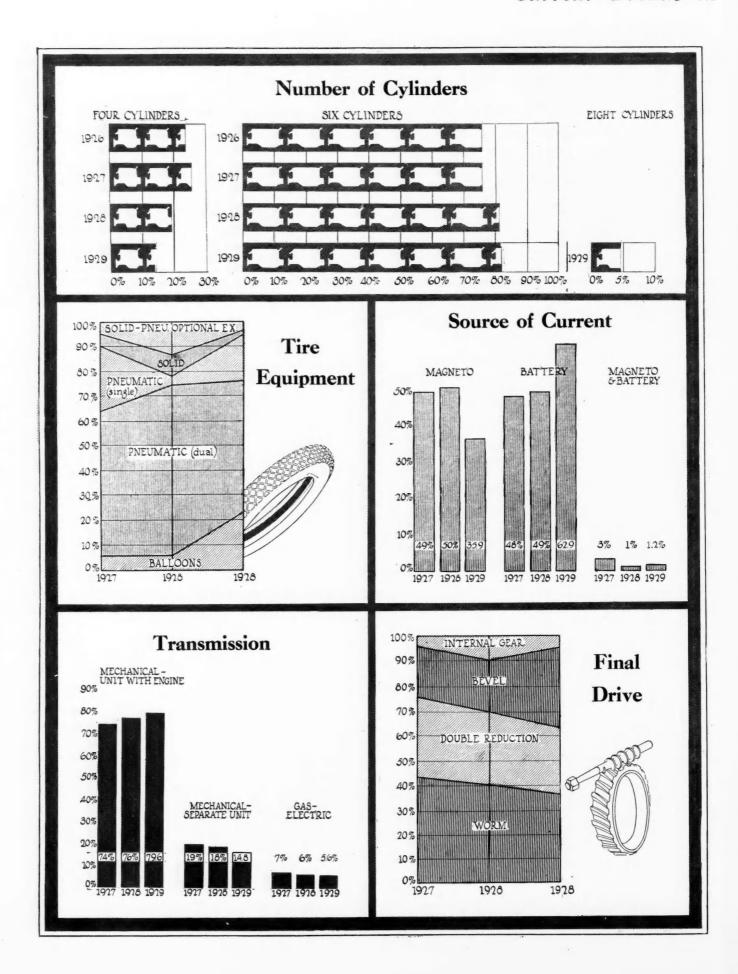
					GEN	NERA	L									ENG	GINE					CLUTCH	BELT	PUL	LEY		DRI	VE	
MAKE AND MODEL	Price (\$)	Capacity: No. of 14" Plows	Plowing Speed (M. P. H.)	Weight Complete (Lbs.)	*Wheel Base (Ins.)	Minimum Turning Diameter (Ft.)	Ground Clearance (Ins.)	Drawbar Adjustable	Drawbar— Belt Rating	Steering Type	Make	No. of Cylinders	Bore and Stroke (Ins.)	Engine Type	Valve Arrangement	Normal R.P.M. at Plowing Speed	Ignition System Make	ureter	Air Cleaner Make		Cooling System Type	TYPE AND MAKE	Diameter (Ins.)	Face (Ins.)	Clutch Type	No. Forw. Speeds Diameter & Face Traction Members (Ins.)	Drive Type to Traction Members	Drive Taken by	Non-Drive Wheel
v. Rumely. W. v. Rumely. Y. v. Rumely. Z. Lis-Ch 20-35. Li	1295 	3 4 5-6 10 4 4-5 5 6 5 5 10 3 4 4 0 0 0 7-8 3 2-3 3-4 4-5 8 14	2 .8a 2 .8a 2 .8a 3 .25 2 .75 2 .75 2 .7a 1 .9a 2 .3a 0 3 .3 3 .3 0 0 2 .58 2	5510 7948 11700 6000 6500 85000 22000 2500 1900 6500 6500 6500 6500 6500 6500 6500 6	80½ 888 98 115 90½ 80 100 117 117 100 117 100 117 100 117 100 117 100 117 100 100	301/2/341/2 341/2/39 45 141/2/28 12 20 201/2/28 16 13/2/2 14 12 5 14 12 14 12 14 12 11 12 11 12 12 13/2/2 11 11 12 12 13/2/2 13/2/2 13/2/2 14 15/2 16/2 16/2 16/2 16/2 16/2 16/2 16/2 16	9 5 6 11 1/4 12 13 14 12 12 13 14 12 12 14 15 11 14 15 11 14 15 11 14 15 11 14 15 11 14 15 11 14 8 12 7	H° H H V. V. H H H H H	20-30 25-40 25-40 40-60 20-35 22-40 25-45 25-45 25-45 25-35 30-40 20-30 12-20 20-30 45-65 12-25 30-40 40-55 100 40-55 100	F.A.K. F.A.K. F.A.K. F.A.K. F.A.K. F.A.K. F.A.K. S.A. S.A. S.A. S.A. S.A. T.D.M.	Own. Own. Own. Own. Own. Own. Wauk. Own. LeRoi Beav. Wauk. Beav. Wauk. Own. Own. Own. Own. Own. Own. Own. Own	222224444444444444444444444444444444444	612x912 9x11x912 434x6 512x7 412x6 412x6 412x6 412x6 312x4 412x6 312x4 412x6 312x4 412x6 4	H H V V V V V V	I. I	850 750 930 900 900 1100 650 550 1000 1000 1000 1000 850 1500 1100 850 1575	Eise Bosch. Eise Bosch. Dixie Dixie Bosch. Bosch.	Own Ker Own Ker Own Ker Own Ker Own Ker Kin Gal Kin Kel Kin Kel Kin Kel Kin Gal Kin Ga	Don Don Don Don Ben Ben K None W-B W-B Pom Pom Don Son Pom Don Str Pom	MO.	Pu.	ES-Own. MD-Own. MD-Own. MD-Own. MD-Own. MD-Own. MD-Own. SP-B&B. SP-B&B. SP-B&B. SP-BBB. SP-TDi SP-B&B. SP-TDi ES-Own. MD-Own. SP-TDi ES-Own. MD-Own. SP-Own. S	1334 1414 222 26 8 12 12 12 41/2 24 1414 16 161/2 115/6 12 12 12 12 12 12 12 12 12 12 14 14 14 14 14 14 14 14 14 14 14 14 14	71/2/81/4 10 10 10 81/2/71/2/91/2 81/2/10 81/2/33/4 71/2/81/2/61/2 81/2/11/11/11/11/11/11/11/11/11/11/11/11/	MD MD MD MD MD MD MD MD MD SP.	1	SG	Hub. Hub. Hub. Hub. Hub. Hub. Hub. Hub.	2 W 2 W 2 W 2 W 2 W 2 W 2 W 2 W 2 W 2 W
letrac 20 letrac 20 letrac 20 letrac 30 letrac 30 agle 41 letrac 31 agle 16 agle 17 agle 16 agle 26 agle 420-40 Sp agle 26 letrac 30 let	2855 1	3-4-5 3-5 3-5 3-5 3-5 3-5 3-5 3-5 3-5 3-5 3	2.2 2.9 2.9 3.1 3.3 3.5 3.0	38444 850 690 690 780	0130	28 32 12 30 30 30 50 14 16 15 16 15 16 16 16 12 16 16 16 16 16 16 16 16 16 16 16 16 16	122 171 171 1115 1115 1115 1115 1115 111	HHHHHHHHUUUUUHHUUUHHHHHHHHHHHHHHHHHHHH	30-45 20-30 20-40 20-30 20-40 20-30 20-40 20-35 20-40 20-35 20-40 20-35 20-40 25-50 20-40 25-50 20-40 25-50 20-30 20-40 20-35 20-40 20-35 20-40 20-35 20-40 20-35 20-40 20-35 20-40 20-35 20-40 20-35 20-40 20-35 20-40 20-35 20-40 20-35 20-40 20-35 20-40 20-35 20-40 20-35 20-40 20-35 20-40 20-35 20-40 20-35 20-40 20-35	T.D.M. T.D.M. T.D.M. F.A.K. F.	Own. Own. Own. Own. Own. Own. Own. Own.	4 6 6 2 2 2 2 2 4 4 4 4 4 4 4 4 4 4 4 4	4 x55 8 x8 8 x10 8 x10 6 x65 4 x65 4 x65 2 x65 4 x65 2	V. H. H. H. V. V. V. H. H. H. V.		1265 1575 450 450 450 450 450 1000 850 850 1000 1000 400 850 850 1000 1000 400 850 850 1000 1000 1000 1000 1000 1000	Eise Eise Dixie Dixie Dixie Dixie Bosch RBosch	Kin. Ke Til. Ke Sch. Ke Sch. Ke Sch. Ke Sch. Ke Sch. Ke Sch. Ke Kin. Ke Kin. Ke Hol ^o Ke Kin. Ke Sch. Ke Sch. Ke Sch. Ke Kin. Ke Sch. Ke Ens. Ga Kin. Ga Kin. Ga Kin. Ga Kin. Ga Sch. C Ens. Kin. C Ens. Kin. C Ens. Ke Ens. Ke Ens. Ke	Pom. Pom. Own. Own. Own. Ben. Town. Ben. Don. Don. Don. Ben. Pom. Ben. Taco.	HC. HC. MO. MO. MO. MO. MO. CS. MO. MO. MO. MO. MO. MO. MO. MO. MO. MO	Pu.	SP-B&B. SP-B&B. ES-Own. ES-Cwn. ES-Cwn. ES-Own. ES-Own. DM-TDi. Co-Own. SP-Own. SP-Own. SP-Own. SP-Own. MD-TDi. MD-TDi. MD-TDi. MD-TDi. MD-TDi. MD-Cov. FD-Own. MD-Cov. FD-Own. MD-Cov. FD-Own. MD-Cov. FD-Own. MD-Cov. FD-Own. MD-TDi.	8 15 24 24 24 24 12 12 12 13 13 14 13 15 15 13 10 10 16 18 10 14 15 14 15 16 18 16 16 18 16 16 16 16 16 16 16 16 16 16 16 16 16	6 8 1/2 1 10 10 10 10 10 8 6 1/2 8 8 8 9 9 7 8 8 8 12 12 12 12 12 12 12 12 12 12 12 12 12	NoNoESSPSPM.D.M.D.M.D.M.D.M.D.M.D.M.D.M.D.M.D.	2 96-24 2 46-12 3 1-34 1 -34 1 -34 1 -34 1 -34 1 -34 2 48-12 2 54-20 3 54-14 3 40-6 3 42-12 3 50-12 3 50-12 3 53-12 2 62-20 2 85-30 3 3 60-18 3 90-24 7 54-8 2 48-12 2 44-12 2 41-9 1 45-10 1 50-12 1 38-10 2 50-12 2 53-12 2 62-20 2 85-30 3 10-6 1 3 60-18 1 3 60-18 1 40-10 1 50-10 1 50-10 1 50-10 1 50-10 1 2 60-20 1 2 60-20 1 2 48-12	IG. SG. SG. SG. SG. SG. SG. SG. SG. SG. S	Axle. Rim. Hub. Axle. Rim. Axle. Axle. Hub. Hub. Axle.	21 21 22 22 22 22 22 22 22 22 22 22 22 2

*—1928 Specifications
*—Others Used
*—Average
ABes—American Bosch
A.K—Avwater Kent
AdR—Axle & Rim
Beav—Beaver
Ben—Bennett
B&B—Borg & Beck
B-L—Erown-Lipe
B&S—Briggs and Stratton
Berl—Berling

BW—Beveled Gear & Worm Gear
CB—Contracting Band
Ch.G—Chain and Gear
Cha—Chain
Clim—Climax
Co—Cowert
CS—Circulating Splash
Dis—Distillate
Don—Donaldson
Eise—Eisemann
Ens—Ensign
ES—Expanding Shoe

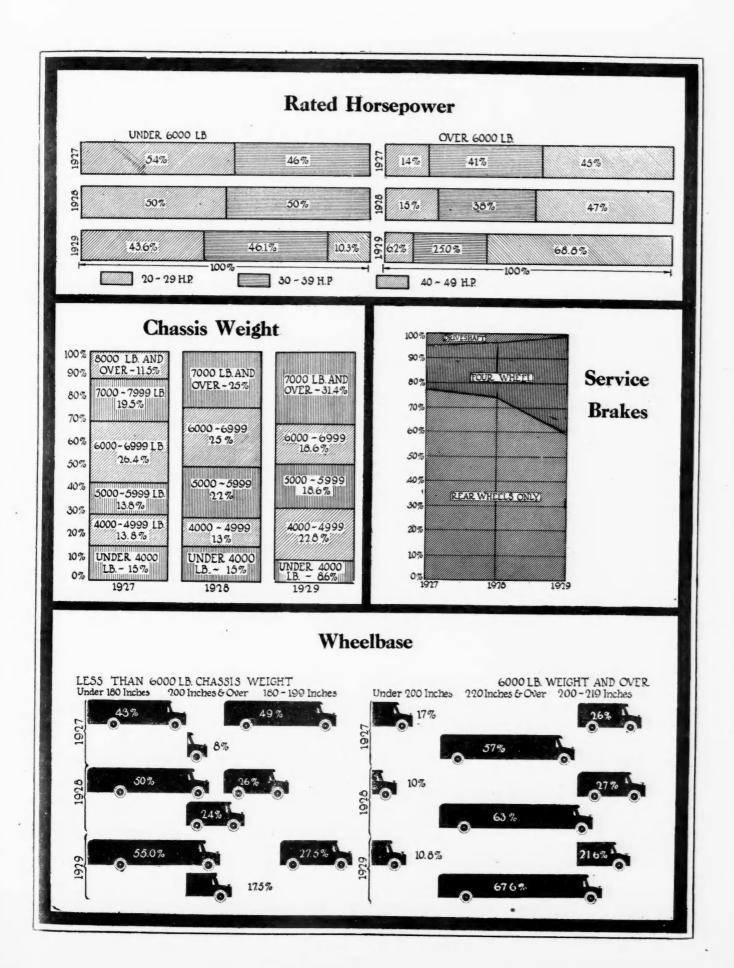
F—F Head Engine
F.A.K.—Front Azle Knuckle
F.A.K.—Front Azle Knuckle
F.D.—Fixing Drum
Fric—Frietion
F.M.—Fuller
G.K.—Gasoline and Kerosene
G.S.—Gasoline and Kerosene
G.S.—Gasoline
H.—Horisontal
H.B.—Handle Bars
H.C.—Hollow Crankshaft
Her—Hercules
Hel—Holley
I.—In Head

Current Trends in



n

Motor Bus Design



M

Own Own GE GE Own GE B-L B-L

Own Own B-L B-L B-L B-L B-L B-L Ful. Ful. Ful. Ful. Ful. Ful. Ful.



American Gasoline

				GENER.	AL				E	NGIN	E				EI	ECT	RICAL	SYSTI	ЕМ	GOVE	RNOR		TRANS
MAKE AND			ase		(Lbs.)		res nd Sizes		ders, (Ins.)	/er	ant		Fue Syste		Igniti Syste		Starter	Bat	tery		rned	Cle	utch
MODEL	Passenger Rating	Price—Chassis	Standard Wheelbase (Ins.)	Tread, Front and Rear (Ins.)	Chassis Weight (Front (Ins.)	Rear (Ins.)	Make and Model	Number of Cylinders, Bore and Stroke (Ins.)	Rated Horse Power (N.A.C.C.)	Valve Arrangement	Oiling System Pressure to	Carburetor Make	Fuel Feed	Make	Current Source	Generator and St Make	Make	Voltage and Amp. Hour Capacity	Type	Maximum Gover Speed (M.P.H.)	Make	Type
†A.C.F. 601-2 †A.C.F. 508-2 †A.C.F. 508-2 †A.C.F. 508-8 Acme 116 Acme 121 Brockway EB Brockway EBA Brockway H Brockway JBF Brockway JI-2 Brockway JBF Clinton 65BS Concord BUS Day-Elder 30A Denby 36 Douglas †Fageol Parlor †Fageol Accord Fageol Concord Fageol Con	27-30) 16 21 20 20 20 20 30 16 16 31 30 31 31 29 26 27 29 26 21 25 29 16 21 25 27 16 21 15 17 21 25 18 12 21 15 17 21 25 18 18 21 11 25 18 18 21 11 25 18 18 21 11 25 18 18 21 11 25 18 18 21 11 25 18 18 21 11 25 18 18 21 11 25 18 18 21 11 25 18 18 21 11 25 18 18 21 11 25 18 18 21 11 25 18 18 21 11 25 18 18 21 11 25 18 18 21 11 25 18 18 21 11 25 18 31 31 31 31 31 31 31 31 31 31 31 31 31	3300 4950 7000 1890 1820	184 210 236 160 184 204 204° 145° 186° 246 160 182	6511-6514 72 - 7614 72 - 7614 72 - 7614 72 - 7614 72 - 7614 72 - 7614 60 - 71 60 - 71 60 - 668 60 - 66 60 - 668	9065 5200 5500 3850 3850 4150 4975 7680 3200 5925 6600 5700 4400 4044 4208 4208 4208 4208 4208 42	P-38x7 P-36x8 P-32x6 P-36x6 P-32x6	B34x7.5d P-38x7d P-36x8d P-32x6d P-36x6d P-36x	Dodge Dodge Lyc. 4Sl Lyc. Ti Lyc. Ti Lyc. Ti Cont. 8l Cont. 6l	G-4 4 x 51 / 2 6-3 4 x 51 / 2 6-4 4 x 53 / 2 6-4 4 x 53 / 2 6-4 2 x 53 / 2 6-3 2 x 51 / 2 2 2 2 2 2 2 2 2 2	43 3 3 7 5 4 8 8 4 8 4 8 6 6 4 3 3 3 7 7 4 8 6 6 4 2 7 3 3 3 7 7 3 3 8 4 7 3 3 3 7 7 3 3 8 4 8 6 6 2 7 3 3 6 0 0 0 3 6 0 0 0 3 6 0 0 0 0	I I I I I I I I I I I I I I I I I I I	abed. ab. ab. ab. ab. ab. ab. ab. ab. ab. ab	Zen. Zen. Zen. Zen. Zen. Zen. Zen. Zen.	V. V	D-R. D-R. D-R. D-R. D-R. D-R. D-R. D-R.	B. B. M. M. B.	D-R. D-R. D-R. D-R. A-L. A-L. A-L. L-N. L-N. L-N. L-N. L-N. L-N. L-N. L	Wil Wil Wil Wil Wil Wil Pre Wil	12-115 12-12 12-13 12-13 12-13 12-13 12-22 12-22 12-22 12-22 12-22 12-22 12-22 12-22 12-22 12-22 12-22 12-23 12-13 12-14 12-13 12-14 12-13 12-14 12-13 12-14 12-13 12-15 12-	Ce. Ce. Ce. Su. Su. Su. Su. Su. Su. Su. Su. Su. Su	35 38 39 30 30 30 38 38 38 37 40 9pt. 35 35 35 40 40 40 40 40 40 40 40 40 40 40 40 40	B-L. B-L. B-L. B-L. B-L. B-L. B-L. B-L.	MDD, MDD, MDD, MDD, MDD, MDD, MDD, MDD,
†Mack City AB †Mack City AB †Mack Parlor AB †Mack City AB †Mack** City AB †Mack City AL †Mack Parlor AL †Mack ** City AB †Mack ** City AB †Mack ** City AB †Mack ** City AB †Mack City AB	29 25 25 29 29 25 29 14–17		225 2301 196 225 233 233 233 1761	68 -633 68 -633 71 -633 71 -633 71 -633 60 -58	5470	P*-Opt. P*-Opt. P*-Opt. P*-34x7 P*-34x7 P*-34x7 P*-34x7 P-34x7	P*-Opt P*-Opt P*-Opt P*-34x7d P*-34x7d P*-34x7d P*-34x7d P-32x6d P-34x7d	Own Al Ow	B 4-4/4x5 B 4-4/4x5 B 4-4/4x5 B 4-4/4x5 L 6-4/4x5 L 6-4/4x5 L 6-4/4x5 Y 6-3%x5	28.9 28.9 43.3 43.3 43.3 27.3	L L L L	a a a a	Str Str Str	V. V. V. E-P E-P E-P	. Spl	M. M. M. M. M. M. M. B. B. B.	N-E* N-E* N-E* N-E* N-E* N-E* D-R.	Exi Exi Exi Exi Exi Exi Exi Exi Wil		Ce* Ce* Ce* Ce* Ce*	Opt. Opt. Opt. Opt. Opt. Opt. Opt. Opt.	Own. Own. None None Own. Own. None B&B. B-L.	None None SP SP None
Pierce Arrow. 2 Pierce Arrow. 2 Rehberger. B4 Reo. GB Royal. D Royal. E Ruggles 66 Ruggles 65 Safeway. 66 Safeway. 66 Schacht. NW Selden 42 Studebaker 75HD	25 30 30 21 24 29 19–21 29–33 25 61 21–30 21–25 21 21 21 21 25 25	4900 2778 2410 2410	196 220 224 175 204 220 180 236 200 224 224 234 205° 210 5 184 0 158	671/-767/	6760	D 26-6	D. 36×6d	Own. Own. Buda BA Own. F Wisc. Lyc. T Wau 6-H Lyc T Cont 12 Cont 15 Own. Big Own. Big Own. Big Own. Big Own. Pres. Own. Pres. Own. Pres.	7 6-4 -514	20 /	T. T. L. F. I. L.	abc. abc. a. a. ab. abc. abc. abc. abc.	Own Own Zen Sch Zen Zen Zen Zen Str	P. P. V.	Del. Del. Eis. N-E. Eis. Remy A-L. Remy Eis. Eis. L-N. N-E. D-R. D-R.	B. B. M. B.	Del. Del. L-N. N-E. L-N. Remy A-L. Remy N-E. L-N. N-E. D-R. D-R. D-R. D-R. D-R. D-R.	Wil. Wil. Wil. Wil. Exi Exi Wil. Wil. Wil. Wil. Wil. Wil. Wil. Wil	12-13: 12-13: 12-13: 6-24(12-13: 6-15: 6-21: 6-21: 12-13: 12-25: 12-17: 12-10: 12-10: 12-10:	2 N-P. 2 N-P. 2 N-P. 2 N-P. 5 N-P. 5 N-P. 5 N-P. 6 N-P. 6 Pic. 6 Ce.	N-P N-P N-P N-P 39 28	Own. Own. B-L. B-L. B-L. B-L. B-L. B-L. Long.	MDD MDD MDD MDD MDD MDD MDD MDD MDD MDD

Fw-4-Wheel
G—Gravity
GE—General Electric
Gem—Gemmer
Gou—Gould
Hann—Handy
Hann—Hannum
HaS—Hall Scott
Heli—Helical
Herc—Hercules
Hob—Hobson
Hoo—Hoopes
Hyd—Hydraulie
I—In Head
I—In Head
I—In Head
I—In Head : overhead camshaft
I-Bs—Internal Driveshaft
I-Fw—Internal Four Wheel

ABBREVIATIONS

"Others furnished

"At extra cost

"Gas Electric

"Frices on application

Services on application

The specifications

The specification

Th

Bal—Ball and Ball
BM—Battery and Magneto
B&B—Borg & Beck
BG—Bevel Gear
B-L—Brown Lipe
Blo—Blood
B-PS—Bevel Pinion and Sector
c—Camshaft Bearings
C&L—Cam and Lever
CAD—Cadillac
Ce—Centrifugal
CGP—Columbus Gear & Pump
Cla—Clark
Cle—Cleveland
Col—Columbia
Cont—Continental
Cot—Cotta

Cov—Covert
d—Dual
d—(Oiling System)—Wrist Pins
Day—Dayton
D-C—Disk Cast Steel
DD—Dead
D-Ds—Disk Drive Shaft (Brakes)
DS—Dual Solid
DeJ—DeJon
Del—Delco
Det—Detroit
Dir—Direc Pressed Steel
DP—(Clutch)—Double Plate
DR—Double Reduction
Dtl—Detlaff
—Gear Case

E—Free End
Eat—Eaton
E-Ds—External Drive-shaft
E-Fw—External Four Wheel
Eis—Eisemann
Eng—Engine
E-P—Electric Pump
ErM—Erie Mall
E-Rw—External Rear Wheels
Exi—Exide
½F—Semi-Floating
¾F—¾ Floating
F—In Head and Side
FA—Drive taken
through Front Axle
FF—Full Floating
Ful—Fuller

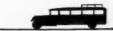
Bus Chassis

e

INS

p....
fidd.

MDD. MDD. None. None. SP. SP. None. MDD. MDD.



MISSION			REA	AR A	KLE			BRAK	ES			SPR	INGS				RUN	NING (GEAR	2		
Gearse Electric Dri	et or ive System				Engine		Ser	vice		Eme		Frent	Rear				Stee Ge			V	heels	MAKE AND
Make	No. Fwd. Speeds or Elec. Motors Low Gear Reduction	Universal Joints, Number and Make	Make and Model	Final Drive	Type Total Ratio from	Type and Lo-	Operation	Action	Braking Area (Sq. Ins.)	Type and Lo-	Braking Area (Sq. Ins.)	Length and Width (Ins.)	Length and Width (Ins.)	Shackles Type	Front Axle Make	Make	Туре	Outside Dia. of Minimum Turn- ing Circle (Ft.)	Dia. of Rims	Make	No. (Dual::1) Type and Material	MODEL
B-L. Eng. Cown Eng. Cown Eng. Cown Eng. B-L. E	4 4.8 4 5.3 4 5.3 4 5.3 4 5.3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	3-Spi. 4-Spi. 4-Spi. 4-Spi. 4-Blo. 3-Spi. 3-Spi. 3-Spi. 3-Spi. 3-Spi. 3-Spi. 4-Spi. 3-Blo.	Tim 63000BX Tim 65250W Wise. 67410 Wise. 67110 Col. 55000 Wise. 4610 Wise. 68310 Tim. 65220-8 Col. 54030 Tim. 65610 Tim. 65611 Tim. 65711 Tim. 65711 Tim. 65710 Tim. 6510 Tim. 6520 Tim. 5620H Wisc. 67510 Wisc. 67510 Wisc. 471 Wisc. 471 Wisc. 471 Wisc. 471 Wisc. 471 Wisc. 1251E Eat. 1500 Own. AE Own. AI Own.	Wo Wo SB SB SB SB SB SB SB S	FF. 5.8 FF. 6.6 FF. 6.3 FF. 6.6 FF. 6.3 FF. 6.6 FF. 6.3 FF. 6.5 FF. 6.3 FF. 6.3 FF. 6.3 FF. 6.3 FF. 4.6 FF. 4.6 FF. 4.6 FF. 4.6 FF. 5.0 FF. 6.3 FF. 6.3 FF. 6.3 FF. 6.3 FF. 6.3 FF. 70 FF. 6.3 FF. 4.7 FF. 5.0	I-Fw. I-Rw. I-Rw. I-Rw. I-Rw. I-Fw. I-Fw. I-Fw. I-Fw. I-Rw. I-Rw. I-Rw. I-Rw. I-Rw. I-Rw. I-Rw. I-Fw. I-Fw. I-Fw. I-Fw. I-Rw. I-Rw	Mec. A-P. Mec. Mec. Mec. Mec. Mec. Mec. Mec. Mec	Dir. Dir. Dir. Dir. Dir. Dir. Dir. Dir.	392 392 550 560 196 271 450 185 234 560 1130 130 351 1182 672 299 111 111 111 111 111 111 111 111 11	I-Rw. I-Fw I-Fw I-Fw I-Fw I-Fw I-Fw I-Fw I-Fw	80 80 1923 114 181 100 185 234 160 130 130 130 174 182 176 177 177 177 177 177 177 177	46-31/2 46-21/2 46-21/2 46-21/2 46-21/2 46-21/2 46-21/2 46-21/2 46-21/2 46-21/2 46-21/2 46-21/2 41-21/2 41-21/2 41-21/2 42-21/2 39-2 39-2 39-2 39-2 39-2 39-2 39-2 39-	60-4 4-5 4-5 4-5 52-3 552-3 60-3 60-3 60-3 60-3 552-2 52-2 52-3 64-4 60-4 56-3 56-3 56-3 56-3 56-3 56-3 56-3 56-3	M M M M M M M M M M M M M M M M M M M	Tim Tim Shu	Ross.	C&L. C&L. C&L. C&L. C&L. C&L. C&L. C&L.	32 40 54 54 62 76 76 78 80 76 78 78 78 70 58 66 77 70 59 40 60 77 55 60 77 60 77 60 77 60 77 60 60 77 60 60 60 60 60 60 60 60 60 60 60 60 60	20 20 20 20 20 20 20 20 20 20 20 20 20 2	Budd.	6 D-P 6 D-P 6 D-P 4 D-P 4 S-C. 4 S-C. 4 S-C. 5 C. 4 D-P 6 D-	tA.C.F. 601 †A.C.F. 508 †Brockway El Brockway El Brockway El Brockway El Brockway El Brockway Brockway Formord 65 †Fageol Parlor †Fageol D De Garlord 50- Garlor
War. Eng B-L. Eng Ful Eng	4 5.3 4 5.3 4 5.3 4 4.0 4 5.3 4 4.0 4 5.3 4 5.3 4 5.3 4 5.3 4 4.0 4 5.3 8 4.0 8 4.0	3-Cle 5 4-Cle 5 4-Cle 5 3-Uni 1 4-Uni 5 2-Spi 0 2-Spi 4-Spi 3-Spi 3-Spi 3-Spi 2 3-Spi 3-Spi	Own	SB. SB. Wo O IG. C IG. O Wo O SB.	FF. 5.3 FF. 5.8 FF. 5.6 FF. 5.0 FF. 5.7 FF. 70 FF. Var 1/2F. 6.2 1/2F. 5.1 1/2F. 5.1 1	1 I-Fw	Hyd. Mec. Mec. Vac. Vac. Vac. Air Air Vac. Vac. Mec. Mec. Mec. Mec. Mec. Mec.	Pow.	357 540 540 436 575 480 530 825 530 444 444 535	E-Ds. I-Rw. E-Ds. I-Rw. I-Rw. I-Rw. I-Fw. I-Fw. I-Fw. E-Ds. I-RwDsDs. E-Ds. E-Ds.	175 192 192 200 288 235 530 413 135 421/2 421/2 421/2	38%-24 41-3 39-214 44-3 39-21/2 50-31/2 42-3 46-21/2 38-21/2 38-21/2 38-21/2 38-21/2 38-21/2 38-21/2 38-21/2 38-21/2	60-31/2 60-3 541/5-3 60-31/2 521/2-3 60-4 60-3 46-4 60-3 563/5-2 563/6-2 563/6-3 563/6-3 563/6-3 60-3 60-3	M M M M M M M M M M M M M	Tim Col Shu Shu Tim	Own Ross. Ross. Jac. Jac. Jac. Ross. Ross. Ross. Ross. Ross. Ross. Ross. Ross.	B-PS. C&L. C&L. S&N. S&N. C&L. C&L. W&W C&L. C&L. C&L. C&L.	40½ 67 67 56 64 60 70 72 66 68 60 62 62 68 60 72	24		4 S-M. 4 D-P. 4 D-P. 4 D-P. 4 D-P. 6 D-P. 6 D-P. 6 D-P. 8 SD 8 SD 8 SD 4 SSD 4 SSD 4 SSD	Schacht. N Selden Studebaker Studebaker 751 Studebaker 751 Studebaker 76 Sg

IG—Internal Gear
Ind—Indestructible
I-Rw—Internal Rear wheel
Jac—Jacox
L—I Head
Lan—Lansing
L-N—Leece Neville
Lyc—Lycoming
Mi—Magneto (Ignition)
M—Metal (Shackles)
Mal—Malleable Iron
MD—Double Disk
MDD—Multiple Dry Disk
M&E—Merchant & Evans
Mec—Merchanical
Mich—Michigan
M.M.—Mechanics Machine

Mot—Motor Wheel
M.P—Mechanical Pump
Mun—Muncie
N.E—North East
N.P—No Provision
N&L—Nuts and Lever
Opt—Optional
P—Pneumatic (Tires)
PD—Dual pneumatics
P—Pressure (Fuel Feed)
Pet—Peters
Pic—Pick
Pie—Pierce
Pow—Power Operated
Pre—Prestolite
R—Rubber

RA-Wheels Swung from Radius

RA—Wheels Swung from Radius
Arms
RBos—Robert Bosch
RwDs—Rear wheels & drive shaft
S—Solid
SB—Spiral Bevel
S-C—Spoked Cast Steel
S-C—Spoked Cast Steel
S-C—Spoked Unit
She—Sheldon
She—Shuler
S&U—Screw and lever
S-M—Spoked Malleable Iron
Smi—Smith
S&N—Screw and Nut

Sne—Snead
SP—Single Plate
S-P—Spoked Pressed Steel
S-P—Spoked Pressed Steel
S-P—Spoked Steel Disk
Stew—Stewart
Str—Stromberg
Su—Suction
S-W—Spoked Wood
T-T Head
TB—Straight Bevel
Tim—Timken
Uni—Universal Machine
UnFA—Unit with Front Axle
U-P—Universal Products

V—Vacuum
Vac—Vacuum
Var—Various
Ves—Vesta
War—Warner Corp.
Wauk—Waukesha
Wes—Westinghouse
W&K—Whitehead & Kales
Wil—Willard
Wisc—Wisconsin
We—Worm
W&R—Worm and Roller
W&S—Worm and Sector
W&W-Worm & Wheel
Yell—Yellow Sleeve
Zen—Zenith

B

MISS

Elect

Ful...
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American Gasoline

				GENER	AL				E	NGIN	Ε				E	LECT	RICAL	SYST	EM	GOVE	RNOR		TRAN
MAKE AND			986		(Lbs.)		ires nd Sizes		ders, (Ins.)	ver	ant		Fu Syst		Ignit Syst		Starter	Ba	ttery		ned	CI	utch
MODEL	Passenger Rating	Price-Chassis	Standard Wheelb (Ins.)	Tread, Front and Rear (Ins.)	Chassis Weight (Front (Ins.)	Rear (Ins.)	Make and Model	Number of Cylinds Bore and Stroke (I	Rated Horse Power (N.A.C.C.)	Valve Arrangeme	Oiling System Pressure to	Carburetor Make	Fuel Feed	Make	Current Source	Generator and St Make	Make	Voltage and Amp. Hour Capacity	Туре	Maximum Gover Speed (M.P.H.)	Make	Type
White. 53 White. 50B W M C GY W M C GX W M C GX	32 28-35 29 25-35 14-21 25-29 34-38 29 38 17-23 29 29 33 33 39	7500 4250 5350	225‡° 224 227° 180 198° 239 239 239 185 225 200 230 230	70 -80 64½-75 68½-75 68½-75 66¼-69 64 -67½ 58½-67½- 72 -78 74 -78 69½-65¼ 71½-70¾ 77½-77¼ 77½-77¼	8000 8500 6600 6495 9000 8000 8500 5885 8570 8100 9400 10752	P-38x7 P-38x7 P-34x7 B-38x9 B34x7.50 P-34x7 B40x9.00 B38x8.25 B40x9.00 B20x7.50 B22x8.25 B7.00x24 B7.00x24	P-37x7d P-34x7 B-38x9d B34x7.50d P-34x7d B40x9.0d B38x8.25 B40x9.00 B20x7.50d	Wauk 6AB Wauk 6HB Own 1A1 Own GRB Own GRB Wauk 6AB Wauk 6AB Wauk 6AB Cad 341 Own Y Own YZ Own YZ Own YZ	6-41/2x53/4	48.6 48.6 38.4 45.9 28.9 28.9 28.6 48.6 35.1 43.3 43.3 43.3		abcabcabcdabcdabcdabcdabcdabcdabcdabcdabcdabcdabcdabcdabcdabdab	Zen. Zen. Zen. Zen. Zen. Zen. Zen. Zen.	V V V V V V V V	M RBos L-N Opt Opt M-E RBos RBos D-R N-E N-E	M B. M B. M B.	L-N L-N L-N N-E	Wes Wil. Pre. Wil. Opt. Opt. Exi Exi Exi Exi Exi Exi	12-152 12-174 12-112 12-132 12-132	Ce	Opt Opt Opt 45 40	B&B. Ful B-L. Own Own Long. Long. Long. Own Long. Own None. Own	MDI MDI DP. SP. SP. SP. SP. MDI DP. SP.

**ABBREVIATIONS:

"O-Others furnished

"-At extra cost

"-Gas Electric

"-Frices on application

§ -Generator only

1-1928 Specifications

1-Manufacturers did not
furnish information

*-Also Fabric Joints

-Main Bearings

ABos -American Bosch

A-L-Auto-Lite

A-P-Air Pressure

b-Yower Rod Bearings

B-Battery (Ignition)

B-Balloons (Tires)

Bal—Ball and Ball
BM—Battery and Magneto
B&B—Borg & Beck
BG—Bevel Gear
B-L—Brown Lipe
Blo—Blood
B-PS—Bevel Pinion and Sector
c—Camshaft Bearings
C&L—Cam and Lever
CAD—Cadillac
Ce—Centrifugal
CGP—Columbus Gear & Pump
Cla—Clark
Cle—Cleveland
Col—Columbia
Cont—Continental
Cot—Cotta

Cov—Covert
d—Dual
d—(Oiling System)—Wrist Pins
Day—Dayton
D-C—Disk Cast Steel
DD—Dead
D-Bs—Disk Drive Shaft (Brakes)
DS—Dual Solid
DeJ—DeJon
Del—Delco
Det—Detroit
Dir—Direct
D-P—Disk Pressed Steel
DP—(Clutch)—Double Plate
DR—Double Reduction
Dtl—Detlaff
e—Gear Case

E—Free End
Eat—Eaton
E-Da—External Drive-shaft
E-Fw—External Four Wheel
Eis—Eisemann
Eng—Engine
E-P—Electric Pump
ErM—Erie Mall
E-Rw—External Rear Wheels
Exi—Exide
½F—Semi-Floating
¾F—¾F [loating
F—In Head and Side
FA—Drive taken through Front Axle
FF—Full Floating
Full—Fuller
Fw—4-Wheel

G—Gravity
GE—General Electric
Gem—Gemmer
Gou—Gould
Han—Handy
Hann.—Hannum
HaS—Hall Scott
Heli—Helical
Here—Hercules
Hob—Hobson
Hoo—Hoopes
Hyd—Hydraulic
I—In Head
Io—In Head; overhead camshaft
I-Fw—Internal Four Wheel
IG—Internal Gear

Motor Fatalities in Cities of More Than 100,000 Population Increase Slightly in 1928

City	12 Mos. 1928	12 Mos. 1927	City	12 Mos. 1928	12 Mos. 1927	City	12 Mos. 1928	12 Mos. 1927
New York, N. Y	1071	1095	Denver, Col	53	57	San Antonio, Tex	66	48
Chicago, Ill	831	797	Louisville, Ky	65	62	Salt Lake City, Utah	45	24
Philadelphia, Pa	347	333	Oakland, Cal	68	57	Youngstown, Ohio	_	
Detroit, Mich	351	398	Rochester, N. Y	69	60	Bridgeport, Conn	45	25
Cleveland, O	263	247	Dallas, Tex	67	47	Dayton, Ohio	70	52
Baltimore, Md	180	168	Toledo, Ohio:	87	109	Scranton, Pa	Production .	_
Boston, Mass	133	131	Birmingham, Ala	63	50	Des Moines, Ia	23	27
St. Louis, Mo	211	160	Providence, R. I	76	51	Springfield, Mass	25(6*)	27(13*)
San Francisco, Cal	135	159	Columbus, Ohio	101	71	Nashville, Tenn	45	46
Pittsburgh, Pa	170(47*)	209(49*)	St. Paul, Minn	55	54	Paterson, N. J	51	50
Los Angeles, Cal	320	317	Houston, Tex	67(21*)	46	Kansas City, Kan	16(4*)	21
Buffalo, N. Y	150	130	Memphis, Tenn	76(32*)	67(31*)	New Bedford, Mass	13(6*)	13(3*)
Milwaukee, Wis	124	123	Akron, Ohio	78(16*)	76	Fall River, Mass	25(11*)	12(3*)
Washington, D. C	73	78	Atlanta, Ga	77(26*)	70(18*)	Camden, N. J	33	19
Minneapolis, Minn	89	62	Omaha, Neb	36	34	Spokane, Wash	26	21
Cincinnati, O	140	133	Richmond, Va	50	43	Albany, N. Y	36	35
Newark, N. J	113(6*)	125(13*)	Worcester, Mass	18	33	Lowell, Mass	17	15
New Orleans, La	111	95	Ft. Worth, Tex	46	38	Cambridge, Mass	_	_
Kansas City, Mo	91	80	New Haven, Conn	45(23*)	50(31*)	Trenton, N. J	57(39*)	45(22*)
Seattle, Wash	63	69	Syracuse, N. Y	57	42	Yonkers, N. Y	_	_
Indianapolis, Ind	104	81	Norfolk, Va	-	****	Reading, Pa	28(15*)	27(14*)
Portland, Ore	66(13*)	61(15*)	Grand Rapids, Mich.	32(15*)	35(12*)	Wilmington, Del	44	34
Jersey City, N. J	50	63	Hartford, Conn	52(25*)	47(26*)			
* Accidents included in	n total but	occurred o	utside city limits.			Total	7204	6874

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Bus Chassis—Continued



MISSI	ON				REA	R AX	LE				BRAKE	S			SPR	INGS				RUN	INING (GEA	R			
	Gearsel		stem					Engine		Serv	ice		Eme		Front	Rear				Stee			V	Vheels		MAKE AND
Make	Location	No. Fwd. Speeds or Elec. Motors	Low Gear Reduction	Universal Joints, Number and Make	Make and Model	Final Drive	Type	Total Ratio from Engine to Drive Wheels on Direct	Type and Lo-	Operation	Action	Braking Area (Sq. Ins.)	Type and Lo-	Braking Area (Sq. Ins.)	Length and Width (Ins.)	Length and Width (Ins.)	Shackles Type	Front Axle Make	Make	Туре	Outside Dia. of Minimum Turn- ing Circle (Ft.)	Dia. of Rims	Make	No. (Dual=1)	Material	MODEL
Ful Ful Ful B-L Own Own Own B-L B-L Mun B-L B-L Mun	UnFa Eng Eng Eng Eng Eng Eng Eng Eng Eng Eng Eng Eng Eng Eng Eng	444444444444444444444444444444444444444	6.20 5.35 5.35 5.05 4.12 4.12 5.35 5.35 4.77 5.35 4.98 4.98 11.00	4-Spi. 3-Spi. 4-Spi. 3-Spi. 3-Spi. 4-Spi. 4-Spi.	Own Spec. Wisc 1305K Tim. 65704D Tim. 65704D Tim. 6520W Tim. 6522W Tim. 6522W Tim. 6621C Tim. 66210-W Tim. 66210-W Tim. 6630-W Tim. 66210-W Tim. 66210-W Tim. 66210-W Tim. 66210-W Tim. 66210-W Tim. 6630-W Tim. 66210-W	Wo. SB SB DR° Wo. Wo.	FF. 1/2F. 1/2F. 1/2F. FF.	6 0 5.4 4.56 4.38° 4.67° 4.00	I-Rw. E-Fw. I-FW. I-Rw. I-Rw. I-Fw. I-Rw.	Vac. Mec A-P Vac A-P A-P A-P Hyd A-P Mec A-P	Dir Pow Dir Pow Pow	434 †† 311 325 588 378 305 378 378	E-DsDsDsDs E-Ds E-DsDsDs I-Rw I-Rw I-Rw I-Rw I-Ds I-Rw I-Ds I-Rw I-Ds	140 †† 311 325 161 40 305 40 222	-2½ 48-3 41½-2½ 41½-2½ 49-3 49-3	54-3 	M M M M M M M M	Tim Shu Own Own Own Tim Tim Tim Tim Tim Tim Tim Tim Tim	Ross Ross Own Own Ross Ross Ross Ross Ross Ross	C&L C&L W&S W&S C&L C&L C&L C&L C&L C&L C&L C&L C&L C&L C&L	57	24 20 20 20 20 22 22 22 22 22 24 24 24	Budd .	4 D-F 4 D-F 4 D-F 4 D-F 4 D-F 5 D-F 5 D-F 6 D-F 6 D-F 6 D-F 6 D-F 7 D-F 8 D-F 8 D-F 9 D-F	V	
	Jac J L L L I Lan J L-N J Lyc I M M M Mal M MD M MDD M ME M Mich M	Interdacox Head Lansin Leece Lycom Lagnetal (S Malles Double Merc Merc Mecha	g Nevil ing O (Igr Shack able I e Distiple I hant anical	lle nition) cles) iron k Dry Disk & Evans		M-P Mun N-E N&L Opt	-Mec -Mur -Nort -No I -Nut Optioneum Dual ressur Peter Pick Pierc -Pow Prest	th East Provisions and Lonal atic (Tir pneuma e (Fuel s er Opera	Pump n ever res) tics Feed)			RBos RwDs S-S-S-S-S-S-S-S-S-S-S-S-S-S-S-S-S-S-S-	Arms —Robe —Rear olid Spiral I -Spoked -Scheble -Separa -Sheldo -Shuler -Screw leeve V	Bevel Cast er te Un and le alve d Mal	ls & driv Steel it ever leable I:	ve shaft		S-P	ingle Plane	Steel D t g Wood Bevel	ine			Wauk- W&K- Wil- Wisc- Wo- W&R- W&S- W&S-	Vacu Vario Vesta Wario Wario West Willa Worn Wood Worn Wo Yello	um us ner Corp. aukesha tinghouse titehead & Kales rd consin m and Roller rm and Sector rm & Wheel w Sleeve

Federal-Aid Road Fund Apportionment by States for Fiscal Year Ending June 30, 1930

Alabama	\$1,554,221	Nevada	960.375
Arizona	1,061,111	New Hampshire	
Arkansas	1,284,382	New Jersey	
California	2,495,345	New Mexico	
Colorado	1,388,755	New York	
Connecticut	477,110	North Carolina	4 544 040
Delaware	365,625	North Dakota	4 405 500
Florida	909,235	Ohio	0 == 4 440
Georgia	1,980,443	Oklahoma	
Hawaii	365,625	Oregon	4 404 000
Idaho	933,902	Pennsylvania	3,325,854
Illinois	3,118,949	Rhode Island	365,625
Indiana	1,917,036	South Carolina	1,061,447
Iowa	2,020,861	South Dakota	1,229,282
Kansas	2,058,305	Tennessee	1,609,662
Kentucky	1,417,634	Texas	4,531,162
Louisiana	1,026,696	Utah	848,592
Maine	678,501	Vermont	365,625
Maryland	633,615	Virginia	1,433,405
Massachusetts	1,090,077	Washington	1,149,489
Michigan	2,204,966	West Virginia	796,408
Minnesota	2,108,104	Wisconsin	4 OW A WOO
Mississippi	1,311,391	Wyoming	000 500
Missouri	2,392,021		
Montana	1,554,060		
Nebraska	1,586,299		\$73,125,000

American Bus Bodies

		Exterior Finish		HARMARA BARARA A A A A A A A A A A A A A A A
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		Buzzet Signal		UUU UUUUUUEUUEUUEEEEEUUU UENEEEENENEEEE
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=	(90	Number Cowl or Hood (Ty		NNNCHENTETHEN NNNNNNNNNNNNNNNNNNNNNNNNNNNNNN
VENTILATORS	Roof	Make		NNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNN
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SS	Material	Floor		
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	1	Other (Location)	BODY	NNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNNN
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۵	Front	Left	m	NNNXHANNNNNNNNNNAHAHAKAKAKAKAKAKAKAKAKAKAKAK
		Right	>	
noisa	ent Loc	Aisle Width (Ins.) Baggage Comparim	B	
ren.			HED	NNN NN NNNNNN NNNN NN NNNNNNN
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		Double (No.)	S	0 4 4 4 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
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S		Loaded (Ins.) Step Height	2	235 235 235 226 226 226 227 227 227 227 227 227 227
0		Floor Height	5	25.55.55.55.55.55.55.55.55.55.55.55.55.5
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GENERAL DIMENSIONS		Height Including Chassis (Ins.)	BODIES FURNIS	72,55 72,55 73
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		Length (Ins.)	m	252355555555555555555555555555555555555
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-			-	Bender Body. A
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		DY MA AND MODEL		Bender Body, Carolina Body, Franhan Nelson Fiftz-John Pay F Fiftz-John Pay P Fiftz-John Pay P Fiftz-John P F F F F F F F F F F F F F F F F F F F
		A A M		Bender Body. Bender Body. Carolina Bod Firita-John D Firita-John D Firita-John D Firita John Firita
		BC		ender E Garolini Carolini Carolini Carolini Carolini Carolini Sifit-Jo Fift-Jo
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American Bus Bodies-Continued

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ž		Coat Hooks		ZZZZZZZ	ZZZZZZZZZZZZZ	l eld N
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	rial	Floor		Rap.	EE BEBEBBBB	RCF—Rubbes Ric—Right C Ric—Right C Re—Rubbes Re—Rubber SB—School B SB—School B SG—School B SG—Special
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R FIN	Cove	gainiJ	UR	Plyw. Fabd. Fabd. Fi.Bd Im. Lea Im. Lea	Im. Lea Im. Lea Plyw. Plyw. Plyw. Mob. Im. Lea Vel Wel Im. Lea FiBb.	o.
INTERIOR FINISHINGS	Seats	Upholstery	CHASSIS MANUFACTURERS	Lea Lea Lea Lea Lea Lea	Lea. Moh. Moh. Moh. Lea. Lea. Lea. Lea.	
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noits	nent Loc	Baggage Comparts	5	RNEERNEERN	ZEZEZE EEZZZZZZZZZZZZZZZZZZZZZZZZZZZZZ	4 N 5 N 15½ N N N N N N N N N N
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SZ		Loaded (Ins.)	Z	10 10/4/0/4	/2/1/4 /20/20 /20	=
ISIO		Floor Height Loaded (Ins.)	FURNIS	11	25252525255555555555555555555555555555	56
GENERAL DIMENSIONS	(,	Body Weight (Lbs	F	3255 2900 2800 2570 2570 3000 3000		
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	BODY MAKE	. 2		Graham Bros Graham Bros Graham Bros Int. Harvester Int. Harvester Motor Transit *Ruggles *Ruggles *Ruggles	Ruggles C5 Ruggles 220 in SD Ruggles 70 Ruggles 226 in PC Ruggles 70 Ruggles 236 in PC Ruggles 70 Ruggles 236 in DD Six Wheel 24 in DD Six	ellow



British Motor Bus Chassis _



					GE	NERAL				ENG	INE			TRAN	ISMISSI	ON	RE	AR AXI	Æ	BRAN	ES	DIN	IENS	IONS
		Weig	ght			Tires and	Type Size		ns.)		Fu Syst				Gear	set			Ratio				Ove	erall
MAKE	Seating Capacity	Chassis Only (Lbs.)	Body Maximum (Lbs.)	Wheelbase (Ins.)	Tread Rear Wheels (Ins.)	Front (Ins.)	Rear (Ins.)	Number of Wheels	Number of Cylinders Bore and Stroke (Ins.)	Valve Arrangement	Carburetor Make	Fuel Feed	Ignition Type	Clutch Type	Location	Number of Forward Speeds	Type	Final Drive	Total Reduction Ra	Location	Operation	Floor Height (Ins.)	Length (Ft. and Ins.)	Width (Fr and Inc.)
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ABBREVIATIONS

B—Battery
Cla—Claudel
Ce—Cone
d—Dual
DR—Double Reduction
Eng—Unit with Engine
F.F—Full Floating
3/FI—Semi-Floating
3/FI—3/4 Floating

Fw—Four Wheels
G—Gravity
Hyd—Hydraulie
I—Valve in Head
IG—Internal Gear
L—"I" Head
M—Magneto
MD—Multiple Disk
Mech—Mechanical
Opt—Optional
P—Pneumatie

Rw—Rear Wheels Only
S—Solid
Sep—Separate Unit
Ser—Mechanical Servo
SI—Sleeve Valve Type
Smi—Smith
Sol—Solex
SP—Single Plate
Sp—Spiral Bevel
Sw—Six Wheels (Braking)

T&Fw—Transmission and Four Wheels
T&Rw—Transmission and Rear Wheels
V—Vacuum
Vac—Vacuum
Wo—Worm
Zem—Zenith
†—Front brakes Extra Cost
*—Driver beside engine



Continental Bus Chassis



МАКЕ	Seating Capacity	Wheelbase (Ins.)	Track (Ins.)	Tires Front	Tires Rear	No. of Wheels	No. of Cylinders Bore and Stroke	Valve Arrangement	Carburetor Make	Fuel Feed	Ignition Type	Clutch Type	Gearset Location	No. Foward Speeds	Final Drive	Brakes (Foot)	Brakes (Hand)	Steering Type	Wheels Type
Bernard. Serliet Serliet Serliet Serliet Serliet Serliet Serliet Serliet Cottin & Desgouttes. De Dion Bouton. affly Panhard & Levassor Panhard & Levassor Saurer Saurer	28 20 35 35 35 40 40 45 35 30 25 30 35 45	204 183 194 195 204 213 213 228 196 168 216 161 196 196 196 228	68 67 76 68 72 76 74 70 64 66 74 74 65 67 72	P34x7 P32x6 P1025x185 P40x8 P40x8 P40x8 P34x7 P36x7 P955x155 P1025x155 P38x7 P1025x185 P36x8 25 P36x8 25 P38x9.75	P34x7d P36x8 P1025x185d P40x8d P40x8d P40x8d P36x7d P36x7d P955x155d P1025x155d P38x7d P38x7d P1025x185d P38x7d P38x7d P1025x185d P38x8, 25 P36x8, 25	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	FRE] 6-3.85x5 6-3.34x4.72 4-4.33x5.51 6-4.33x5.51 6-4.33x5.51 6-4.33x5.51 6-4.33x5.51 6-4.35x5.51 6-4.35x5.51 6-3.54x5.11 4-4.01x5.51 6-4.33x5.51 6-4.33x5.51 6-4.33x5.51 6-4.33x5.51	L		Vac. Grav. Vac. Vac. Vac. Vac. Vac. Vac. Vac. Vac	Bat. Mag	MD MD MD MD SP SP SP SP SP	Eng Sep Sep Sep Sep Sep Eng Eng Eng Eng Eng Eng Eng Eng	4	Sp	IFR. IFR. IFR. IFR. IFR. IFR. IFR. IFR.	IRIRIRIFRIRIRIRIR.	WW WW WW SN. SN. SN. SN.	D D D D D D D D D CS CS
							BELG	IA	N										
BovyBrossel	30 32 35 45 32 36	196 158 171 171 185 210	64 64 67 67 64 68	P34x7 P32x6 P36x8 P36x8 P955x155 P38x7	P34x7 P32x6d P36x8 P36x8 P955x155d P38x7d	4 4 6 4	8-3.14x5.11 8-3.14x5.11 4-3.54x5.51	I I Sl	SolexZenithZenithZenithZenithZenithZenithZenith	Vac Vac Vac	Mag Mag Mag Bat Mag Mag	MD MD	Eng Eng Eng Eng Eng	4 4 4	DR Wo Wo DR Sp	IFR IFR IFR	IR IR IR ITF ITF	WS WS C&L	D D D D D
							ITAL	IAI	N										
Lancia	46	233	73	P985x205	P985x205	4	6-3.93x5.90	I	Zenith	Vac	Mag.	SP	Eng	4	Sp	IFR	IR	WS	D

ABBREVIATIONS:

Bat—Battery C&L—Cam and Lever CS—Cast Steel d—Dual D—Disk

DR—Double Reduction
EFR—External Front and Rear
ET—External Transmission
Eng—Unit with Engine
F—"F" Head
Grav—Gravity
I—Valve in Head

IFR—Internal Front and Rear IR—Internal Rear ITFR—Internal Front Rear and Transmission.
IFT—Internal Front and Trans.
L-"L" Head Mag—Magneto

MD—Multiple Disk
P—Pneumatic
SN—Screw and Nut
SP—Single Plate
Sp—Spiral Bevel
Vac—Vacuum
Wo—Worm Drive

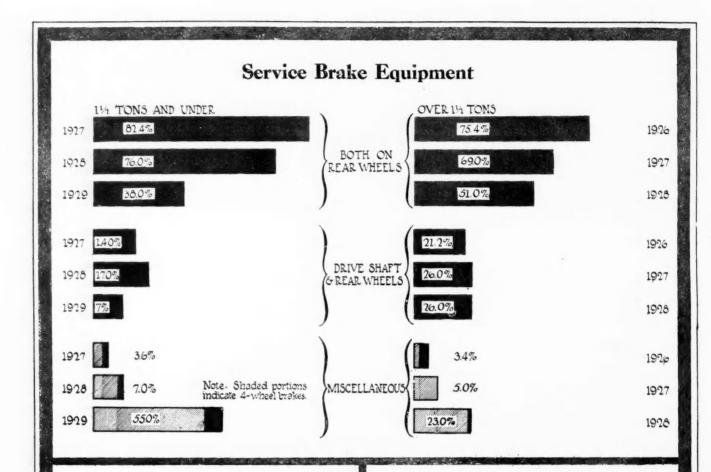
WolG—Internal Gear Worm Drive WS—Worm and Sector

More Than 1,058,000 Motor Vehicles Registered in Canada Last Year

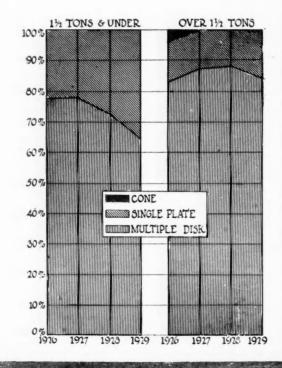
(Compiled by the Canadian Automobile Association, in which are federated the motor leagues of the provinces of the Dominion)

Province	Passen	ger Cars	Commercia	l Vehicles	Total	for Province
	1927	1928	1927	1928	1927	1928
Alberta	67,892	78,314	5,110	8,561	73,002	86,875
British Columbia	63,594	70,492	12,593	14,277	76,187	84,769
Manitoba	56,914	63,000	5,213	7,000	62,127	70,000
New Brunswick	22,227	25,000	2,075	2,678	24,302	27,678
Nova Scotia	26,184	30,347	3,640	4,569	29,824	34,916
Ontario	389,523	425,000	50,008	57,000	439,531	482,000
Prince Edward Island	4,130	4,958	235	446	4,365	5,404
Quebec	107,680	126,750	18,208	21,708	125,888	148,458
Saskatchewan	93,854	102,500	9,460	15,500	103,314	118,000
Total for Canada, exclusive of Yukon and North-West Territories	831,998	926,361	106,542	131,739	938,540	1,058,100

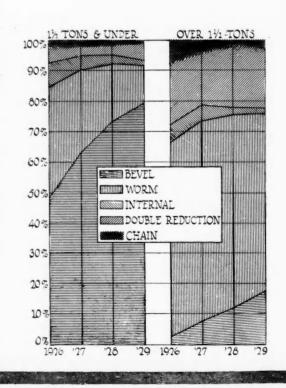
Current Trends in



Clutch Type

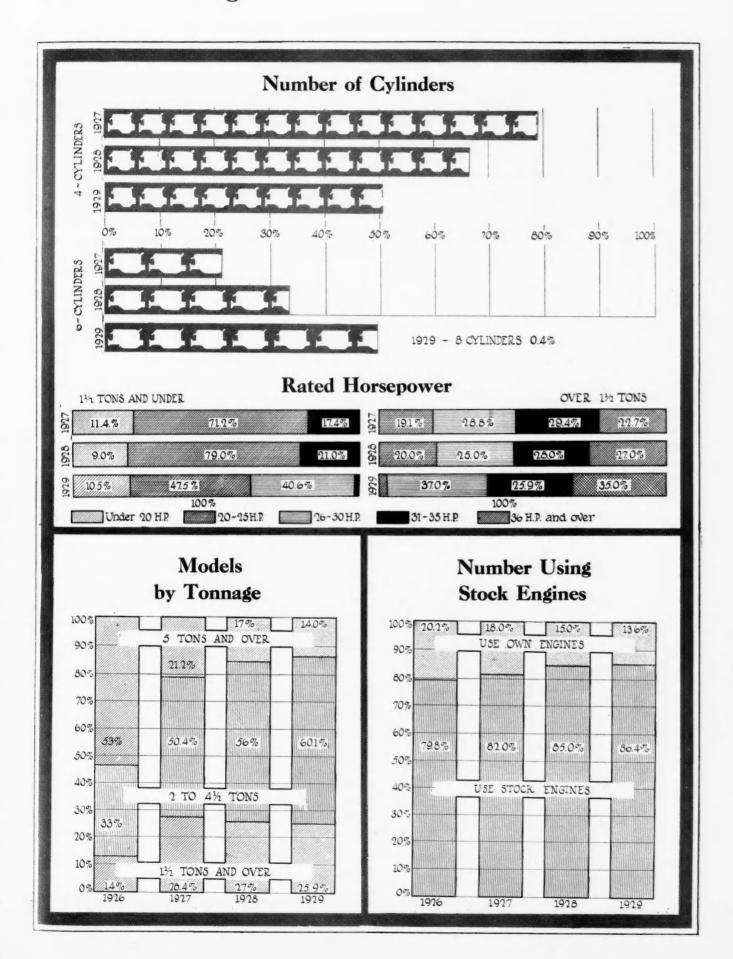


Final Drive



12

Motor Truck Design

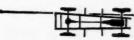




American Gasoline

TRUCK			7		RES TYPE	ı	ENGINE		FUE	L	ELECT		Clutch	Gearset		REAR A	XLE				
MAKE AND MODEL	Tonnage	Price (\$)	Wheelbase (Ins.)	Front	Rear	Make and Model	No. of Cyls. Bore and Stroke (Ins.)	NACC H.P.	Carburetor	Feed Type	Ignition Make	Generator and Starter Make	Type and Make	Make and Model	Universals Make	Make and Model	Final Drive	Axle Type	Brakes Location Front Axle Make	Steering Gear Make	Name of the last o
ne 14 ne 16 ne 24 ne 44, 340	1	120 120 136	156	P30x5 P30x5 P30x5	P30x5 P30x5 P30x5	Con H8 Con 29L Con S4	. 4-41/4x41/2	18.2 19.8 28.9	Til Til Str	V	A-L		P.B&B. P.B&B. D.B-L.	W-G B-L 31	Blo	Cla Cla Col. 54010	. S.	F	B*. Sal. B*. Sal. A*. Col	Ross Ross Ross	1. 3
ne	2		156° 156° 156°	P32x6 P32x6 S34x5	P32x6 P32x6 S34x8	Con S4 Con 16C Con S4	$4-4\frac{1}{4}\times4\frac{1}{2}$	28.9 27.3 28.9	Str Str	V V V	A-L Eis	A-L	D.B-L D.B-L D.B-L	B-L 31° B-L 35	Blo Blo Blo	Tim 5620° Tim 5620° Tim 65600	. B°	F	E. Col° E. Col° A*. Tim	. Ross	. 4
ne	$\frac{21/2}{31/2}$		165½° 173° 200°	S34x5 S36x5 S36x5	S34x8 S36x10 S36x10	Con 6B	$4-4\frac{1}{2}x5\frac{1}{2}$	33.7 32.4 40.8	Str	V	Eis	A-L	D.B-L	B-L 60	Blo	Tim 65600 Tim 65704	· W	F	A*. Tim	Ross	. 6
76 ne 90L, 150 ne 151, 15H	41.51		180° 220°	S36x7° P°36x8°	S40x16° P°36°x8°	Con 8T Con B7 Con 15H	4-5x6 6-4½x5¾	40.8	Str Str	V V	Eis Eis	A-L	D.B-L D.B-L D.B-L	B-L 60	Blo Blo	Tim 65704. Tim 68700DF Wis°1261K°	W W	. F	A*. Tim B. Tim B. Shu	Ross	
rn	1, 11/2	2300 2300°	144 144°	S34x4 P°30°x5°	S34x6 DP30x5°	Con S4 Con 15C	4-41/4x41/2 6-3%x45/8	28.9 27.3	Zen Zen	G	Bos-R A-L	A-L	D.Ful D.Ful	Ful SU12 Ful SU 12°	Spi	Cla 720 Cla B365°	. S.	1/2.	A. Shu A. Shu	Ross	0
n	2,21/2	2600 2900° 3600°	156°	P34x5 S36x4 P34x7	DP34x5 S36x8° DP34x7	Con 15C Con S4 Buda DW6	6-3 ³ / ₈ x4 ⁵ / ₈ 4-4 ¹ / ₄ x4 ¹ / ₂ 6-3 ³ / ₄ x5	27.3 28.9 33.7	Zen Zen Zen	G G	A-L Bos-R A-L		D.Ful	Ful SU 12. Ful GU14° Ful GU14°	Spi Spi	Cla B720 Tim 65600° Cla B720°	S. W		A. Shu A. Shu A. Shu	. Ross	
n	3 4. 5	3250 4250°	156 162°	S36x5 S36x6	S36x10 S40x12°	Buda ETU. Buda YBU-l	$4-4\frac{1}{4}x5\frac{1}{2}$ $4-4\frac{1}{2}x6$	28.9 32.4	Zen.	G	Bos-R		D.B-L D.Ful	B-L 51 B-L 60	Spi Pet	Tim 65700 Tim 66600°	·W	F	A. Tim	Ross.	
rican LaFranceChief rican LaFrance. W	30	2850 3950	156 Opt	P32x6 S36x5 S36x6	DP32x6 S36x10 DS40x6	Buda DW6 Own 2R	6-3 ³ / ₄ x5 4-4 ¹ / ₄ x6 4-4 ³ / ₄ x6	33.7 28.9 36.1	Zen.	V	D-R. Bos-A.			Own 2R	Spi Own.	Tim 63-700B. Own 2R	. R.	. F	E*. Tim	Ross.	
rican LaFrance S, V r.LaFrance Big Chief rican LaFrance Z6½	5	5200° 6500 5750	Opt 226° Opt	P40x8 S36x7	DP40x8 DS40x7	Own 5R Buda GL6 Own 5R	6-41/2x6	38.6 36.1	Zen Str Zen.	V V	Bos-A D-R Bos-A	L-N D-R	P.B-L.	Own 5R Own 5R	Own. Own. Own.	Own 5R Own 16R Own 5R	. R.	. F	B*. Own A. Own B*. Own	Own.	. 1
rican LaFrance. TT.	5	3950 4950	131 133	S36x5 S36x6	S36x10 DS36x6	Own 2R Own 3R	$4-4\frac{1}{4}x6$ $4-4\frac{1}{4}x6$	28.9 28.9	Zen	V	Bos-A		D.Own. D.Own.	Own 2R Own 3R	Own.	Own 5R	. R.	F	B* Own		
rican LaFranceTT eder30, 40	1/2, 2	5500°	133 148° 150°	S36x6° S34x4° S34x4	DS40x6° S34°x6° S34x6	Own 5R Her OX Buda KBU-	4-4%x6 4-4x5 [4-4x5½	36.1 25.6 25.6	Zen Zen° Zen	V	Bos-A A-L	A-L	D.B-L	Own 5R B-L 35 B-L 35	Own. Spi Spi	Own 5R Tim	. W	1/2°	B*. Own	Ross.	
eder30B eder30-6 eder46	11/2		153° 154°	S34x4 S36x4	S34x6 S36x8	Buda HS6.	6-3%x4½ 6-3%x4½	27.3 27.3	Zen.	V	A-L A-L	A-L	D.B-L D.B-L	B-L 35	Spi Spi	Tim	. W.	1/2. F.	A*. Tim A*. Tim A*. Tim	Ross.	
eder50, 60 eder55	21/2, 3		152° 152°	S36x4° S36x4 S36x4	S36x8° S36x8	Buda EBU-I Con K4	4-4½x5½ 4-4½x5¼ 6-4x5½	28.9	Zen Zen	V	A-L	A-L	D.B-L D.B-L	B-L	Spi	Tim	· W	F	A*. Tim	Ross.	
eder 50-6 eder 60-6, 70-6 eder 70TT, 70	2½ 3, 4		158° 158° 156°	S36x5° S36x6	S36x8 S36x10° S36x12	Buda BUS. Buda BUS. Buda YBU-l	6-4x51/8	38.4 38.4 32.4	Zen Zen Zen	V	A-L A-L	A-L A-L	D.B-L	B-L. B-L 51° B-L 55	Spi Spi Spi	TimTim	. W.	F F	A*. Tim A*. Tim B*. Tim	Ross.	
eder 30TT			115 116	S34x4 S36x4	S34x6 S36x8	Her OX Buda EBU-I	4-4x5 4-41/4x51/2	25 6 28.9	Zen Zen	V	A-L A-L	A-L	D.B-L D.B-L	B-L 35 B-L 51	Spi	Tim	· W	F	A. Tim	Ross.	
bury 26G6, 26B bury26G4	11/2		132° 145° 160°	P30x5 P30x5 P32x6	P30x5 DP30x5	Lyc C4	4-4x5	25.3	Zen	G	A-L	A-L	D.B-L	B-L	Blo°. Spi	Cla° Tim	. B.	F	A*. Shu. A*. Shu.	Gem.	
bury	3 3		168°	P34x7 S36x4	DP32x6 DP34x7 S36x8	Lyc TF Lyc TS Con K4	6-37/8x5	31.5 36.2 27.2	Zen Zen Zen	V	D-R D-R Bos-A	A-L A-L	D.B-L.	B-L B-L.	Spi Spi	Tim Tim Tim	. W.	F.	A*. Tim A*. Tim A*. Tim	Gem.	
bury22D	4 5		174° 174°	S36x5 S36x6	DS36x6 DS40x7	Con L4	4-4½x5½ 4-5x6	32.4 40.0	Zen Zen	V	Bos-A	A-L Bos-A	D.B-L D.B-L	B-L55 Max B-L60 Max	Spi Spi	Tim	W.W.	F	A* Tim		
ar			114°	P32°x6° S35°x5 S34x6	P32°x6° S36x8°	Own Y	$4-4\frac{1}{4}x5\frac{1}{2}$	25.6 28.9	Str	G	Bos-A	L-N	P.Own.	B-L 31 Own Y°	Spi	Tim 5326 DX Own H°	R.	F	E*. Tim A*. Own	. Han Ross	
er. MT, HST, HT	TT 1		106°	S34x5° P30x5	S36x12 S36x8° P30x5	Own M Own Y Con 8R	4-41/4x51/2 6-34/8x41/2	32.4 28.9 27.3	Str Str Zen	G G	Bos-A Bos-A Del		P.Own.	Own D Own Y° B-L 31	Spi Spi Spi	Own M Own H° Cla	R. R. R. B.	F	A*. Own A*. Own A†. Shu.	Ross.	
erman	$\frac{11/4}{11/2}$		154 166°	P32x6 834x5	P32x6 S 34x8	Con 8R	6-33/8x41/2 6-33/8x41/2	27.3 27.3	Zen Zen	G	D-R D-R	A-L D-R	D.B-L D.B-L	B-L 31 B-L 31	Spi	Cla Tim	. B	1/2.	A*. Shu. A*. Shu.	. Ross.	
erman	21,31		180°	S36x5° S36x7 P30x5	S36x10° S36x14 P30x5	Con 6B	6-41/4×6	33.7 43.3 22.5	Zen	G	D-R	D-R	D.B-L	B-L 51 B-L 60 B-L 20	Spi	Tim	W. W. B.	F	A*. Shu.	Ross.	:
wayJF, CJBF	11/4 11/2 11/2		137° 142	P30°x5° P32x6	P30°x5° P32x6	Wis C Wis F	6-31/4x41/4 4-33/4x5	25.3 22.5	Zen Zen Zen	V	A-L A-L A-L	A-L A-L	P.B&B.	B-L 20 B-L 20	Spi Spi Spi	Col 36001 Col 36001° Col 54030	. B	1/2° F	G*. Col. G* Col G* Col	Ross. Ross. Ross.	
wayE, S	$\frac{1\frac{1}{2}}{1\frac{1}{2}}$, 2		147½° 155¾°	P32°x6° P32x6	P32°x6° P32x6	Wis SU Wis N	6-31/2×41/4	25.6 29.7	Zen Zen	V V	L-N A-L	L-N A-L	D.B-L D.B-L	B-L 30° B-L 35	Spi Spi	Col°55001°	. B°.	F	G* Col°	Ross.	
way EYW, SY	3		156° 154½° 170°	P32x6 S36x5 P34x7	DP32x6° S36x10 DP34x7	Wis Y Con K4	6-3%x5 4-41/8x51/4 6-4x5	27.3	Zen	V	Eis		D.B-L	B-L 35	Spi	Wis 4610 Tim 65704S	R. W	F	G* Col.	Ross.	
way KR, R way RT, T	3, 4		1605/8° 1755/8°	S36x5° S36x5°	S36x10° S36x12°	Con L4 Con B7	4-5x6	38.4 32.4 40.0	Zen Zen Zen	V	L-N Eis, Eis		D.B-L D.B-L	B-L 60	Spi Spi	Tim 65704°S. Tim 66700°S.	W.W	F.	B*. 1 m	Ross.	
wayT-18	51/2			S36x6 S36x6	S40x14 DS40x8	Con B7 Buda BBU.		40.0	Zen Zen	V	Eis		D.B-L D.B-L	B-L 60Max B-L 70	Spi	Tim 68700S	WW	F	B*. Tim B†. Tim	Ross.	1
olet Can	12	395 495	107 124 131	B30x4.50 P30x5 P30x5	B30x4.50 P30x5 P30x5	Own Cap Own	4-3+1x4 4-3+6x4 6-3+6x334	21.7 21.7 26.3	Car Car	v	D-R D-R D-R	D-R D-R	P.Own.	Own Nat Own Cap Own	Own.	Wis 68310 Tim 65704°S. Tim 66700°S. Tim 68700S. Tim 68700S. Own Nat. Own Cap. Tim 5622°H. Tim 5622°H.	S	1/2.	E*. Own	Own.	
olet Utility go 15A, 20A go 16A, 21A	1½, 2 1½, 2 2½, 2		135° 135°	P32°x6° P32x6	P32°x6° DP32x6	Wau V Wau XK	6-63/4x41/2	$\frac{25.6}{33.7}$	Zen Zen	G	Apo	A-L*	D.B-L D.B-L	B-L 35 B-L 35	Pet Pet	Tim 5622°H. Tim 5622°H.	B° B°	F	Gt. Tim	Ross.	
go 31B, 35C	$\frac{2\frac{1}{2}}{3,3\frac{1}{2}}$		159°	S36x4° S36x5 P36x8	S36x8°. S36x10 DP36x8	Wau V Wau CU	6-41/x43/	25.6 30.6 43.3	Zen	G	Apo		D.B-L D.B-L	B-L 35 B-L 55 Max	Pet	Tim 65000H. Ti'65706°DH	W.	F	G† Tim	Ross.	
	4,51/2		Opt	S36x6 P30°x5°	S36°x12° P30°x5°	Wau KU Wau EU Buda WTU.	4-5x61/4	40.0 22.5	Zen Zen	G.,	Apo		D.B-L D.B-L	B-L55 Max B-L70 Max B-L 31	Pet Blo	Ti' 65706DH. Ti'66702°DH Cla B°501	W W B.	F	B†. Tim B‡. Tim A*. Shu.	Ross.	. 1
n	3		190	S34x4 P32x6	DS34x4 DP32x6	Buda KTU. Buda DW6	4-4x5 ¹ / ₄ 6-3 ³ / ₄ x5 4-4 ¹ / ₄ x5 ¹ / ₂ 6-4x5 ¹ / ₈	25.6 33.7 28.9	Zen Zen	V	Spl	D-R D-R	D.B-L D.B-L	B-L 35 B-L 35	Blo	Tim 64600 Cla E720	W.B.	1/2. 1/2. 1/2 F.	A*. Tim A*. Shu.	Ross.	
n	31/2		190		DS34x5 DP34x7 DS36x6	Buda ETU. Buda BUS. Buda YTU.	6-4x5½ 4-4½x6	28.9 38.4 32.4	Zen Str Zen	V	Spl	D-R	D.B-L B-L	B-L 55 B-L 55 B-L55Max°	Blo	Tim 65600B. Tim 65600SP Tim 66600	- W.	F	A. Tim	. Ross.	
n120L, 120LM	4,5 5½		204 172	S36x6 S36x6	DS36x7 S40x14	Buda BTU.	4-5x6½	40.0 40.0	Zen	V	Spl	Bos-A	D.B-L D.B-L	B-L60Max°	Blo	Ti' 68702DH Ti' 68702DH	P W	F	A*. Tim A†. Tim A*. Tim	Ross.	
n	1,110		174°	P34x5 P32x6 S34x4	P34x5 P32x6	Con S4	4-41/4x41/2 6-33/8x41/2 4-41/4x41/2 4-41/8x51/4	28.9 27.3	Zen Str	V	Bos-A	Bos-A	D.B-L D.B-L	B-L 31 B-L 31	Spi	Tim 6258° Tim 6258	· W	1/2° 1/2. 1/2 F.	A*. Tim A*. Tim	Ross.	
sdale	3° 3½		163°	S36x4 S36x6	S34x6 S36x8 DS40x6	Con S4 Con K4 Con B5	14-4%X0	27.3 28.9 27.2 36.0	Zen Zen Zen	V	Bos-A Bos-A	Bos-A*.	D.B-L D.B-L	B-L 51°	Spi Spi	Tim 64600 Tim 6566 Tim 6666	· W. W.	F. F.	A*. Tim A*. Tim A*. Tim	Ross.	
sdale6,4X	3,3½ 5		177° 176°	S36x5 S36x7	DS40°x5 DS40x7	Con L4 Con B7	4-4½x5½ 4-5x6	32.4 40.0	Zen. Zen	V	Bos-A			B-L 60 Max B-L60Max° B-L 60 Max	Spi	Tim 6666° Tim 6760	· W	F	A*. Tim	Ross. Ross. Ross.	
man	3 5		130°	P32x6 P38x7 P42x9	P32x6 P38x7 P42x0	Buda HS6. Buda DW 6. Buda YBU-I	16-33/4×5	27.3 33.7	Str	V	D-R	D-R	D.Ful	B-L 60 Max Ful GU12 Ful RU16 Ful RU16 Cov JUH Mun T23N Ful SU 12	Spi	Own	. W	F	A*. Own E*. Wis.	. Ross.	
man 6-0, 6-0X merce 8A	5		144°	P42x9 P42x9 P30x5	P42x9 P42x9 P30x5	Buda YBU-1 Buda BUS. Con 11U	0-4x0/8	32.4 38.4 25.3	Str Str Zen	V	D-R	D-R D-R D-R	D.Ful D.Ful P.Long	Ful RU16 Ful RU16 Cov JUH	Spi Spi	Wis. Wis 120J-FF. Wis 120J-FF. Cla B365	R.	F	E*. Wis. E*. Wis. A Shu.	. Ross.	
merce20Z, 25Z merce.Sup.11,SD11	1,11/4 11/2 11/2		136 118°	P32°x6° P32°x6°	P32°x6° P34°x7°	Buda HS6	10-3%x4½	25.3 27.3 28.9	Zen Zen	V	A-L Bos-A	A-L None°	P.B&B. D.Ful.	Mun T23N Ful SU 12	Spi Blo	Cla B 600°	· IS	. F	E. Col. A. Shu.	. Han	
merce S 11Z merce 30Z, 40Z	11/2, 2		168		DP30x5 DP36°x6°	Buda HS 6 Buda DS 6		28.9 27.3 31.5	Zen	V	A-L	A-L	P.B&B. D.B-L	Ful SU 12 Mun T 8 B-L 35 B-L 51	Blo.	Tim	. S	F	E. Tim	Han.	
nerce 50Z, 60Z nerce 70Z, 80Z	2½,3 3¼,4		175	S36x5 S36x6 P32x6	S36x12° S35x14° P32x6	Buda DS 6 Buda BUS Buda BA 6 Con 18 E	6-416-516	38.4 40.9	Zen Zen Zen	V	A.T.					Tim 65706DE Tim 66700D. Tim 5268	W.	F	E. Tim	D	
tt	1/2,2 21/2 21/2		150°	P32x6	P34°x7° S36x8‡	Con 15 C Con K 4	6-33/8x45/8	27.3	Zen.	v.:	D-R	D-R	D.B-L.	B-L 35°	Spi	Tim 5268 Tim 63703°H Tim 65000D. Tim 65000D.	w.	F.	G+ Tim	Ross.	1

Truck Chassis



TRUCK			3	SIZI	TIRES E & TYPE		ENGINE		FUI	EL	ELECT		Clutch	Gearset		REAR A	XLE				1
MAKE AND MODEL	Tonnage	Price (\$)	Wheelbase (L	Fron	t Rear	Make and Model	No. of Cyls. Bore and Stroke (Ins.)	NACC H.P.	Carburetor	Feed Type	Ignition Make	Generator and Starter Make	Type and Make	Make and Model	Universals Make	Make and Model	Final Drive	Axle Type	Brakes Location Front Axle Make	ng G	
enby 43 enby 27 enby 27 enby 27 enby 27 enby 27 enby 27 enby 210 iamond T 76, 3 iamond T 76, 3 iamond T 290 iamond T 15, 1 iamond T 302 iamond T 15, 1 iamond T 302 iamond T USs, K33 amond T Ss0, 502 iamond T USS, K33 amond T Ss0, 502 iamond T Ss0, 50	3 4 4 5 1, 11/2 2 1/2 2	2950 4500 4800 1100° 1100° 1100° 1100° 1100° 11110° 11110° 1110° 1110° 1110° 110° 110° 100	1444° 144° 156° 162° 170° 128 157 170° 128 157 170° 128 157 171 197 171 171	P3458 S3685 S3686 P3485 S3685 S3686 P3485 S3685 P3686 P368	DP34x7 DP36x8 S36x10 DP36x6 S36x10 DP36x6 S36x10 DP36x6 S36x10 DP36x6 S36x10 DP36x6 S36x10 DP36x6 S36x8 S36x12 DS40x7 DP30x5 DP32x6 S36x5 DS36x5 DS36x5 DS36x5 DS36x5 DS36x5 DS36x6 DP32x6 S36x12 B29x5 DS36x6 DP32x6 S36x12 B29x5 DS36x6 DP32x6 S36x10 DS36x6 DP36x6 DP36x	Her OX Her OX Her G. Her G. Her G. Her G. Own Down Down Down Down Down Down Down Do	4-4x51/4 -44x51/4 -43x51/4 -33xx51/4 -33x	28 9 3 3 7 3 3 4 4 4 4 2 2 5 6 6 6 1 1 2 5 6 6 6 1 1 2 5 6 6 6 1 1 2 5 6 6 6 1 2 2 4 7 3 3 5 5 6 6 6 1 2 5 6 6 6 1 2 5 6 6 6 1 3 5 6 6 6 6 1 2 5 6 6 6 6 1 3 5 6 6 6 6 6 1 3 5 6 6 6 6 6 6 1 3 5 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	Zen. Zen. Zen. Zen. Zen. Zen. Zen. Zen.	V. V	DR.	D-R: D-R: D-R: D-R: D-R: D-R: D-R: D-R:	D.B.L. D.B.L. D.B.L. D.B.L. D.B.L. D.B.L. D.B.L. D.B.L. D.Ful E.C. D.C. D.C.	B-L 55 B-L 5 B-L 55 B-L	Spi. Spi. Spi. Spi. Spi. Spi. Spi. Spi.	Dwn° Firm. F	WWWWWBBBBWWWWWWWWWWWWWWWWWWWWWWWWWWWWW	F. F. F. F. A. A. A. G.	AL TIM AL	Ross.	66 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6

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American Gasoline

TRUCK		2		RES & TYPE	E	NGINE		FU	EL		TRICAL TEM	Clutch	Gearset	9	REAR AX	LE		-	e	
MAKE AND MODEL	Tonnage Price (\$)	Wheelbase (Ins.)	Front	Rear	Make and Model	No of Cyls. Bore and S roke (Ins.)	NACC H.P.	Carbaretor	Feed Type	Ignition Make	Generator and Starter Make	Type and Make	Make and Model	Universals Make	Make and Model	Final Drive	Axle Type	Brakes Location	Front Axle Make	Steering Gear Make
offredson B36, W36 offredson W54 offredson W54 offredson W64, W56 offredson W66 A offredson W6	1, 5, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,	323 336 336 336 336 346	\$36x5 \$36x6 \$36x6 \$36x6 \$236x6	\$36x12* \$36x12* \$36x12* \$36x14* \$36x5* \$36x6* \$36*x5* \$36x6* \$36*x8* \$36x10* \$	Own 89. GMC 39. Buda WTU Buda HS 6 Buda KBU-I Buda BW 6 Lye CT Lye CT Lye TH Wau 6KS Lye TS Wau 6KO Wau ER Wau 6 AB Lye S Lye TS Her L Lye S Lye TS Her L Lye S Lye TS Her L Lye TS Her L Lye TS Her G Lye TS Lye TS Her L Lye CT Con 6B Con 15C Lye C4W Con 6B Con 6B Con 6B Con 6B Lye S Buda WTU Buda BT 0 Buda HS 6 Buda EBU-I Buda BT 6 Buda BW-I Buda BM 6 Buda EBU-I Buda BM 6 Buda BW-I Buda BM 6 Buda EBU-I Buda BM 6 Buda EBU-I Buda BM 6 Buda BW-I Buda BM 6 Buda BM	6-35 xx5 4 4-14 xx61 2 4-41 xx61 2 4-41 xx61 2 4-41 xx51 4 4-4x51 5 4-4x51	22. 27. 33. 7. 7. 32. 4. 4. 35. 9. 9. 36. 37. 7. 32. 4. 9. 36. 37. 7. 22. 5. 4. 40. 0. 448. 6. 6. 25. 6. 6. 25. 6.	Zen. Zen. Zen. Zen. Zen. Zen. Zen. Str. Str. Str. Str. Zen. Zen. Zen. Zen. Zen. Zen. Zen. Zen	P. V.	A-L. A-L. Bos-R. A-L. Bos-R. A-L. A-L. A-L. A-L. A-L. A-L. A-L. Bis-Eis-Eis-Eis-Eis-Eis-Eis-Eis-Eis-Eis-R-L. Bos-R. A-L. A-L. A-L. A-L. A-L. A-L. A-L. A-L	A-L. A-L. A-L. A-L. A-L. A-L. A-L. A-L.	D. Own D. Own D. Own P. B&B D. Own D. B-L D. Ful D. B-L D.	B-L 60 B-L 60° C wn C wn C wn Own Own Own Own Own B-L 21 B-L 51 B-L 55 B	Spi. Spi. Spi. M.	Own° Tim 64601° Tim 65706N Tim 67600° Tim 5260H Tim 65000° Tim 5260H Tim 63721H Tim 63721H Tim 63721H Tim 65700N Tim 5260H Tim 65700H Tim 65000 Tim 56000 Tim 56700 Tim 56700SP Cla 366 Cla B 365 Wis 1700 Wis 18990T Wis 1800° Wis 1700 Wis 1800° Wis 1700 Wis 1800° Wis 1700 Tim 65700SP Cla 366 Cla B 365 Wis 471° Wis 1800° Wis 1500° Tim 65700SP Tim 65700SP Cla 366 Cla 566 Cla 566 Cla 566 Cla 566 Cla 5670D Tim 6570D	WW BS WW	HELVIERE FEREFERE FEREFERE FEREFERE FEREFERE VEREFERE FEREFERE FEREFERE FEREFERE FEREFERE	A** EE* EE* EA	Own Own Eat Own Eat Tim	Ross 8 Ross 9 Jac 1 Ross 2 Jac 1 Ross 4 Ross 4 Ross 5 Ross 5 Ross 5 Ross 6 Ross 6 Ross 6 Ross 7 Ross

Truck Chassis—Continued

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					RES & TYPE	E	ENGINE		FU	EL		FRICAL TEM	Clutch	Gearset		REAR A	(LE					
TRUCK MAKE AND MODEL	Tonnage	Price (\$)	Wheelbase (Ins.)	Front	Rear	Make and Model	No. of Cyls. Bore and Stroke (Ins.)	NACC H.P.	Carburetor	Feed Type	Ignition Make	Generator and Starter Make	Type and Make	Make and Model	Universals Make	Make and Model	Final Drive	Axle Type	S Loc	Front Axle Make	Steering Gear Make	Weight (Lbs.)
diana. 641-7 Harvester SD, 6 Sp Harvester. S-26	3/4,1		. 184° 124° 130°	S36x6 P30x5° P32x4½	S40x12 P30x5° P32x4½	Wis 7. Wau XA Lyc 4SL	6-4½x5 4-3½x4½ 6-3¼x4½	48.6 19.6 25.3	Zen.	V	Eis D-R D-R	A-L. D-R. D-R.	Roc	M.M	M.M	Tim 68700SP Eat 1124*° Eat.	S	1/2.	B*. S H* E H* E	hu R	Ross. 10	000 243 324
Harvester. S-24, SL-34, SF-34 Harves'SF-36, SL-36 Harvester. SD-44 Harvester. SF-46	2 2		. 160° . 117 . 117	P30°x5° P30x5 P30x5 P30x5 P32x6	P30°x5° P30x5 P32x6 P32x6 P34x7	Lye CT Lye 4SL Lye CT Lye 4SL Lye 4SL	4-3 ⁸ / ₄ x5 6-3 ¹ / ₂ x4 ¹ / ₂ 4-3 ³ / ₄ x5 6-3 ¹ / ₄ x4 ¹ / ₂ 6-3 ¹ / ₄ x4 ¹ / ₂	22.5 25.3 22.5 25.3 25.3	Zen.	V. V		D-R. D-R. None None	P.Long. P.Long. P.Long.	Own Own Own	M.M M.M M.M	Eat. Eat. Eat. Eat. Eat.	S	1/2. 1/2. 1/2. 1/2. 1/2.	H * E H * E H * E H * E	at. Cat. Cat. C	CAS. 3 CAS. 3 CAS. 3	359 364 370 375 395
Harvest' HS-54, HS-54C Harvester 54, 54C Harvester 74 74C	$ \begin{array}{c} 2\frac{1}{2} \\ 2\frac{1}{2} \\ 3\frac{1}{2} \end{array} $. 148° . 140° . 154°	S36x5‡ S36x5‡ S36x6‡	S36x10°‡ S36x10°‡ S40x12	Ha S151 Own Own	4-4 ¹ / ₄ x5 ¹ / ₂ 4-4 ¹ / ₄ x5 4-4 ¹ / ₄ x5	28.9 28.9 28.9	Zen.	G G G	Bos-R Bos-R Bos-R	D-R*	P.Own P.Own D.Own	Own	Own.	Own° Own° Own	Co.	Do	E*. E B*. O B*. O	wn. O	wn. 6	79: 64: 87:
Harvester HS-74, HS-74C 104 C Harvester HS 104 C Harvester 54C, 74C Harvester HS-54,	9		1	S36x6‡ S36x6 36x6‡ S36x6°	S40x12 S40x14 S40x14 S36x12°	Ha S152 Own Ha S 152 Own	4-4 ³ / ₄ x5 ¹ / ₂ 4-4 ¹ / ₄ x5 4-4 ³ / ₄ x5 ¹ / ₂ 4-4 ¹ / ₄ x5	36.1 28.9 36.1 28.9	Zen.	G G G	Bos-R Bos-R Bos-R	D-R*	P.Own. D.Own. P.Own. D.Own.	Own	Own.	Eat 74-100,000 Own Own Own	C	D	B*. E	at 0)wn. 8	02 89 04 83
HS-54C Harvester HS-74			. 130° 144°	S36x5 S36x6	S36x8 S40x12	Ha S 151 Ha S 152		28.9 36.1	Own	G	Bos-R Bos-R	D-R*		Own		Own° Eat 74-100,000			E*. E			79 96
HS-104C. aworth 45 aworth 55 aworth D greeth J aworth N aworth N aworth S aworth	3 4 5 10 2 21/2° 3	1785 2085 3130 3750 3450 4395 5250 5975	163° 158° 172° 172° 170° 178°	S36x6 P30x5 P32x6 P32x6 S36x5 P32x6 S36x6‡ S36x67 P32x6 S36°x5‡ S36x5‡ P34x7 S36x6‡ S°36°x4° S36x4	S40x12° P30x5 P32x6 DP32x6 S36x10 DP32x6 S40x12 S40x14 DS40x8 DP32x6 S36°x8°‡ S36x10 DP34x7 S40x12‡ ‡S°36°x6° S36x8‡	Ha S 152 Buda WTU Buda HS 6 Buda KBU-I Buda EBU Buda DW 6 Buda BTU. Wau GU. Con 15C. Con K4. Con 6B. Con L4. ‡Own 40,000 Own 50,000	4-4/x5/2 6-33/x5/3 4-4/x6 4-5x6/2 4-5x6/4 6-33/x45/4 4-4/4x4/2 4-4/x5/4 6-33/x5 4-4/x5/2 4-3/x5/2 4-4/x5/2	36.1 22.5 27.3 25.6 28.9 33.7 32.4 40.0 46.2 27.3 28.9 27.2 33.7 32.4 24.1 28.9	Zen. Zen. Zen. Zen. Zen. Zen. Str Zen. Str Zen. Str Zen. Str	V. V. V. V. V. G. G. G. G. V.	Bos-R. D-R D-R D-R Bos-R. Bos-R. Bos-R. A-L. Bos-R. Eis Eis Eis Eis	D-R. D-R. D-R. D-R. D-R. D-R. D-R. D-R.	D.B-L	B-L 31 B-L 35 B-L 35 B-L 51 B-L 51 B-L 60 Max B-L 60 Max B-L 31 B-L 35° B-L 55 Max B-L 55 Max B-L 55 Max	Spi Blo Blo Blo Blo	Cla 506. Tim 63720H Tim 65700S. Cla B 720. Tim 66700S. Tim 68700S. Tim 68700. Tim 5620. Tim 65000D Tim 65700D Tim 65700D.	B. W. W. W. W. W. W. W. W. W.	1/2 F. F. F	A*. T A*. T B*. T B*. T A*. SI A*. T A*. T B*. T	la R la R lm R lm R lm R lm R lm R lm R lm R lm	Coss. 3 Coss. 3 Coss. 4 Coss. 6 Coss. 8 Coss. 9 Coss. 1 Coss. 5 Coss. 6 Coss. 7 Coss.	02: 34: 36: 47: 63: 52: 88: 97: 10: 54: 62: 62: 78: 41:
Goliath. biber. ge	53 43/29 53 33/39/29 54 55 51/29 52 51/29 51/	3500 3500 3500 3500 3500 3650 4650 3500 3650 3650 3650 3650 3650 3650 3	147° 170° 160° 160° 163° 202° 145° 145° 145° 145° 146° 168° 144° 166° 160° 160° 160° 160° 160° 160° 160	\$36x6‡ \$36x6‡ \$36x6‡ \$36x6\$ \$36x5 \$36x5 \$36x5 \$36x6 \$336x4 \$36x4 \$36x4 \$36x4 \$36x4 \$36x4 \$36x4 \$36x4 \$36x5 \$36x5 \$36x5 \$36x5 \$36x7 \$36x4 \$36x7 \$36x4 \$36x5 \$36x5 \$36x5 \$36x5 \$36x5 \$36x5 \$36x5 \$34x7 \$35x4 \$36x4 \$36x4 \$36x4 \$36x4 \$36x4 \$36x5 \$36x5 \$36x5 \$36x5 \$36x5 \$34x7 \$35x4 \$36x5 \$34x7 \$36x4 \$36x5 \$34x7 \$36x4 \$36x5 \$34x7 \$36x4 \$36x5 \$34x7 \$36x4 \$36x5 \$	\$40°x14° \$30x5.50 \$20x5 \$30x72 \$20x5 \$30x72 \$20x5 \$30x72 \$20x5 \$30x72 \$20x6 \$23x6 \$240°x142 \$34x71 \$23x6 \$23x6 \$23x6 \$23x6 \$22x6 \$22x6 \$23x6 \$23	Wau DU Con Con Con K4 Con 6B Con 6B Con 1A Buda BUS. Con 1A Buda BUS. Con 1A Buda BUS. Con 1A	4 4 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	40.9 25.6 25.6 28.9 28.9 28.9 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40	Str Str Str Str Str Str Zen Zen Zen Zen Zen Zen Zen Zen	V. G.	Bos-R. Bos-R. Bos-R. Bos-R. A-L. A-L. A-L. A-L. A-L.	Bos-A. Bos-A. None. A-L. None. A-L. Opt. D-R D-R D-R D-R N-E	D.B.L. D.	B-L 20 B-L 20 B-L 20 B-L 20 B-L 20 B-L 35 B-L 60° B-L 60° B-L 60. B-L 35	Spi	Tim 5620H. Tim 65600° Tim 65700D Tim 65700SP. Tim 65700SP. Tim 6760° Tim 6460D Tim 5620 Wis 6617 Tim 65700D Tim 56700D Tim 56700D Tim 56700D Tim 65700D Tim 6570D Tim 65700D Tim 6570D Tim 65700D Tim	B.B.W.B.W.W.W.W.W.W.W.W.W.W.W.W.W.W.W.W	1222 1 1 1 1 1 1 1 1 1	B+ TTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT	mm mm mm mm mm mm mm m	COS 10 10 10 10 10 10 10 1	88888888888888888888888888888888888888

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American Gasoline

TRUCK			7		RES & SIZE	I	ENGINE		FUI	EL	ELECTE	RICAL TEM	Clutch	Gearset		REAR A	XLE					
MAKE AND MODEL	Tonnage	Price (\$)	Wheelbase (Ins.)	Front	Rear	Make and Model	No. of Cyls. Bore and Stroke (Ins.)	NACC H.P.	Carbureter	Feed Type	Ignition Make	Generator and Starter Make	Type and Make	Make and Model	Universals Make	Make and Model	Final Drive	Axle Type	Brakes Location	Front Axle Make	Steering Gear Make	Weight (Lbs.)
Neble 146B, 146W Noble 156 Noble 164 Noble 164 Noble 166 Noble 166 Noble 184 Oneida A-9, B-9 Oneida C-9 D-9 One	3 4 1 2 3 3 4 1 2 2 3 3 3 5 2 2 3 3 5 2 3 3 5 3 5	2080° 3080° 2480° 2480° 4175° 5180 2450° 2	130° 165° 170° 146° 146° 146° 150° 162° 162° 162° 162° 162° 162° 162° 174° 168 175 168 175 186° 188	P32x6 P32x6 S36x5 P34x7 P32x6 P34x7 S36x8 P34x7 S36x8 P32x6 P36x6 P36x5 S36x5	\$36x10°‡ \$36x10°‡ \$36x12‡ D\$36x5‡ \$34x7 D\$36x6° D\$36x6° D\$36x7° S\$6x7° S\$6x7° \$36x7° \$36x12° \$40x14 D\$36*x6° \$36x12° \$40x14 D\$36*x6° \$36x12° \$40x14 D\$36*x6° \$36x12° \$40x14 D\$36*x6° \$34x7 \$5\$34*x7° \$5\$34\$x12° \$5\$36x12° \$36x12° \$36x12° \$36x12°	Lye 4SG Con K 4. Lye TS Wau CU Con L4 Wau DU Con Con Con Con 18E Con 16C		27. 3 3 7 7 3 3 2 4 4 3 2 5 4 6 1 5 2 5 5 3 2 2 5 5 6 3 2 5 5 6 6 2 5 2 5 5 6 6 2 5 2 5 5 6 6 2 5 2 5	Str. Str. Str. Str. Zen. Zen. Zen. Zen. Zen. Zen. Zen. Zen	V. V	Bos-R.	A-L. A-L. A-L. A-L. L-N. L-N.	D.Ful. D.Ful. D.Ful. D.Ful. D.Ful. D.Ful. D.Ful. D.Ful. D.B-L. D.B-L. D.B-L. D.B-L. D.B-L. D.Ful. D.B-L. D.	Ful HU Own XA B-L B-L 55° Own RD° Own RF Own RF Own RF B-L 55° B-L 60 B-L 55 B-L 56 Cov SHO Own W-G Ful	U-M. U-M. U-M. U-M. U-M. U-M. U-M. U-M.	Tim 63720D°X Tim 63720D°X Tim 65700D°X Tim 65704D Tim 65704D Tim 65704D Tim 65704D Tim 65706D Tim 65600 Tim 65600 Tim 65600 Wis 4600 Wis 765B0 Own H Own RD Own RD Own RD Own RD Own RE Cown RE Eat Eat Eat Eat Eat Eat Eat Eat Eat Ea	WWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWWW	FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFF	BAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	Tim. Tim. Tim. Tim. Tim. Tim. Tim. Tim.	Ross.	4475° 6150 6155 615
29-66A Stering. EC 29-66A Stewart. Buddy Stewart 16X, 24X Stewart 24, 25, 25W Stewart. 24, 25, 25W Stewart. 18X Stewart. 18X Stewart. 19X, 22X Stewart. 19X, 22X Studebaker. Erskine 25X Studebaker. Frskine 25X Studebaker. GD-N Studebaker. 76 Sp., 75HD United. 16C United. 20, 30 United. 20, 30 United. 32C6, 50C6 United. 32C6, 50C6 United. 70C6.	34,1 114,1 114,1 114,1 12,2 2,1 3,3 1,4 114,1 11	995° 1295 1645° 1975° 2095° 2690 4200° 675 1075 3275°	145°	P32x4½ P32x4½ P30x5 P30x5 P30x5 S°34°x4° S°34°x4° S36x5	P30x5 P30x5 P30x5	Own EU. Own 6 AB. Lyc. Lyc CT. Lyc 4° Lyc 4° Lyc 4° Lyc 4 SL. Lyc TF. Lyc TS. Con 9F. Own Own Con 20-L. Con 16C. Her OX. Con 6B. Her L. Con 8T.	6-27/x43/4 4-33/x5 6-31/x41/4 4-4x5 6-31/x41/4 6-35/x5 6-37/x5 6-37/x5 6-37/x5 6-37/x5 4-31/x41/4 6-37/x5 4-31/x41/4 6-33/x43/4 6-33/x43/4 6-33/x43/4 6-33/x43/4 6-33/x43/4	40.0 48.6 19.6 22.5 25.3 25.6 25.3 31.5 218.2 27.3 36.2 19.6 118.2 27.3 25.6 27.3	ZenStr	G G G G V G V G V G V G V G V G V G V G V G V G V G V V V V V V V V V V V V G V	Eis D-R	L-N. L-N. D-R. D-R. D-R. D-R. D-R. D-R. D-R. D-R	D.B-L D.W-G° D.Ful D.Ful D.Ful D.Ful D.Long P.Long. P.Long. P.B&B. P.B&B. D.B-L D.B-L D.B-L D.B-L	Own* Own* Own* W-G* Ful SU-1 Ful Ful W-G Own Ful W-G Own Ful B-L 31* B-L 31* B-L 35* B-L 35* B-L 35* B-L 55*	Spi. Spi. Spi. Spi. U-P° U-P. U-P. Spi. Spi. Spi. Spi. Spi. Spi. Spi. Spi	Own° Own° Sal° Sal° Cla B-365 Cla Tim° Tim. Tim. Tim. Cla B365 Cla B365 Cla B365 Col 54000° Wis 6600° Wis 6600° Wis 1400 Wis 1400	S S S° W° W B S B B S°	F. 1/2/2 1/2/2 1/2/2 FF F.	G. G. G. G. G. G. G. G. H.* G. B.	Own Col	Ross. Ross. Gem. Gem. Ross° Ross.	9750 10380 2773° 2680 3838° 3960° 4158° 5000 7724° 2860 5100° 2400 2500 3500° 3600 4800° 6200 6400°

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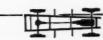
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9750 10380 2773° 2680 3838° 3960° 4158° 5000 7724°

Truck Chassis—Continued



TRUCK			•		RES & SIZE	1	ENGINE		FUI	EL		RICAL TEM	Clutch	Gearset		REAR AX	LE				
MAKE AND MODEL	Tonnage	Price (\$)	Wheelbase (Ins.)	Front	Rear	Make and Model	No. of Cyls. Bore and Stroke (Ins.)	NACC H.P.	Carbureter	Feed Type	Ignition Make	Generator and Starter Make	Type and Make	Make and Model	Universals Make	Make and Model	Final Drive	Brakes Location	Front Axle Make	Steering Gear Make	Weight (Lbs.)
itled	2 3 3 4 4 14 11 12 2 12 2 12 2 12 2 12 2	4765° 3875° 22 22 44	165° 180° 174° 174° 134° 150° Opt. 168° Opt. 168° 172° 172° 160° 160° 160° 146°	P34x7 S36x4 S36x34 S36x34 S36x34 S36x35 S36x6 S36x7 S36x5 S36x6 S36x6 S36x6 S36x6 S36x6 S36x6 S36x7 S36x6 S36x7 S36x6 S36x6 S36x6 S36x7 S36x6 S36x6 S36x6 S36x7 S36x6 S36x7 S36x5 S36x6 S36x6 S36x7 S36x5 S36x6 S36x6 S36x7 S36x5 S36x6 S36x6 S36x6 S36x6 S36x6 S36x6 S36x7 S36x5 S36x6 S3	P32x6 P30x5 P34x7 S36x81 S36x10 S36x14 S36x10 P40x8 P40x8 P40x8 P40x8 P40x8 P40x8 P40x8 P40x8 P40x8 P40x8 P40x8 P40x8 P40x8 P40x8 P40x8 P40x8 P40x8 P40x8 P536x5 DF34x7 DF34x7 DF34x7 DF36x5 DF36x5 DF	Own 6. Own 6. Own 6. Wau V Wau V Wau GU Wau 6QL Wau DÜ Wau 6KU Own GRB Own GRB Own GRB Own GRB Own GRB Con S 4 Con. Con 15 C. Con R 18. Con K4 Con R 20. Con B5. Con B	0-328442 0-32845 (4-412x6 4-4x5 4-4x5 4-4x5 4-4x5 4-4x5 4-412x53 6-318x43 6-318x43 6-318x43 6-318x43 6-318x43 4-412x53 4-412x53 4-412x53 4-412x53 4-412x53 6-412x53 4-412x53 4-412x53 6-412x53 4-412x53 6-412x53 4-412x53 6-412x53 4-412x53 6-412x53 4-412x53 6-412x53 4-412x53 6-32x43 6-32x44 6-32x64 6-32x44 6-32x64	36. 1 5 27 3 3 4 4 4 4 8 6 4 3 4 4 4 8 6 6 4 3 4 4 4 8 6 6 4 3 4 4 4 8 6 6 4 3 4 6 2 5 6 6 6 3 3 4 4 0 0 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	Zen. Zen. Zen. Zen. Zen. Zen. Zen. Zen.	G. V.	Eis	A-L. A-L. A-L. A-L. A-L. A-L. A-L. A-L.	D.B.L. D.Ful. D.B.L. D.	B-L 60 B-L 31 B-L 31 B-L 31 B-L 31 B-L 31 B-L 31 B-L 35 B-L 35 B-L 35 B-L 35 B-L 35 B-L 51 B-L 51 B-L 51 B-L 51 B-L 51 B-L 51 B-L 52 B-L 52 B-L 52 B-L 53 B-L 53 B-L 53 B-L 53 B-L 55 B-	U-M. Spi. Spi. Spi. Spi. Spi. Spi. Spi. Own. Own. Own. M. M. Spi. Spi. Spi. Spi. Spi. Spi. Spi. Spi	Wis 'Wis. Wis. Wis. Wis. Wis. Own Col 35,000. Col 54,000. Tim. Wis 8800. Wis 1450. Wis 1700. Tim 64600. Tim 6560. Own Own Own Own	R. FR. FS. 12 S. 14 W. FW. FF. W. FF. S. 12 S. 14 W. FF. W. W. FF. W. W. FF. W.	A A A A A A A A A A A A A A A A A A A	Shu	Ross.	98 30 43 57 60 61
BBREVIATIONS: -Others also. Wheelbase More than one wheelbase More than one wheelbase TiresBalloonPheumatic. DP.—Dual pneumatics stequipmentSolidsPneumatic can be fur at extra costBreine Buda-Buda CoCon-Continental Motor CoContinental Motor CoContinental Motor CoContinental Motor Co	nished Corp. Corp. Wks. Corp. Co. Co. Co.	у Со.		*— A-E A-I App Co DJ-I D-I D-I Eis Exi Gå G-P N-I No Pol RB Sci Spl US Ve WW i Bå Bå B-I Co Co De	Electric S Generator Starter not at extre Starter at St	and Starter at a supplied. G to cost. extra cost. 30 sch Magnett Auto-Lite Corp. dec. Corp. temy Co. byneto Corp. a Magneto Co. and Davis. 3. B. Co. deville Co. East Elect. Copplied. Lite Co. Bosch Magneto Co. f Electrical Co. fellotter Co. depth and Heat attery Corp. a Magneto Co. f Electrical Co. depth and Heat attery Corp. a Magneto Co. f Electrical Co. depth and Heat attery Corp. and Gearset two speed Tran of Beek Co. Lipe Gear Co. Carans. Corp. Gear Co.	ce and o Co. ce and orp. o Co. ce Corp. M. Co ns. optional.			Ful-H-S Lon-M-E M.M Mur O — P- Vell B.G. Blo- M-E M-E Vell- U-P U-P U-P Col- Con Con Con Con	—Merch Cone. —Merch —Merch —Merch —Merch —Merch —Merch —Merch —Warn —Yellow Univers —Unive —Blood l —Merch —Herch —Herch —Herch —Herch —Therm —Almet —Unive —Therm —Almet —Unive —Therm —Almet —Couth —Couth —Couth —Couth —Coath —Coath —Coath —Coath —Coath	ant and Mfg. Co. nant and hanics M ie Gear ' Oil ord Drill. er Gear ' Sleeve ' al real Mae Bros. Ma hanics M hand Univ. ifg. Co. oid Rub ial Univ. real Mae Rear oating. uarter Fl Bevel. Equip. C bia Akle enental Ax	Machine Co. V. E. Wk hine Co. chine Co. Evans C achine C ber Co. Joint. C chine Co. ackine Co. ackine Co. ackine Co. ackine Co. ackine Co.	0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0		G—4-wheel on dr H—4-wheel	Reduce vel. vvel. ry Ax n Axle rand Pa n Det Axle a nsin P neels o offt and Brake brake ivesha brake cal. ic. Brake cal. ic. Brake cal. ic. Gear ww Pro Gear	de Co. arts Co. Axts Co.	Spring Inc. Spring Inc. Co. Co. T Wheel wheel hemers a emers a emers of Macle P Co. P Co. T Co.	co. ls. s. gency gency gency	

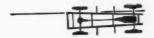
ABBREVIATIONS:



Continental Gasoline

		GE	NER	AL INFO	RMATION			ENGIN	NE					ECTR YSTE			TR	ANSI	MISS	SION				NING AR	
14.00				Tire and			10	DIGCE			Fu Syst						G	earse	t			Bra	kes	9	
MAKE AND MODEL	Tons Capacity	Wheelbase (In.)	Track (In.)	Front (m.m. or inches)	Rear (m.m. or inches)	No. of Cylinders Bore and Stroke	Valve Arrangement	Cyls. Cast in One Camshaft Drive	Oiling System (Pressure to)	Water Circulation	Carburetor Make	Fuel Feed	Current Source	Starter Fitted?	Generator Fitted?	Clutch Type	Location	No. Fwd. Speeds	Position of Lever	Universal Joints	Final Drive	Foot Type and Location	Hand Type and Location	Steering Gear Type	W.L. L. T.
ernard ernard itroen. itroen. ottin & Desgouttes ottin & Desgouttes e Dion Bouton e Dion Bouton ewald elewald elahaye elahaye elahaye elahaye elahaye urtu urtu urtu duco afily	4 5 1 2 3 3 3 3 4 4 4 5 5 6 7 1 2 2 4 1 1 2 2 4 1 1 2 2 4 1 1 2 2 7 10 0	1611 1611 130 1499 1666 166 166 169 133 133 134 144 116 110 111 111 111 111 111 111 111 111	65 5 6 6 6 6 7 7 7 8 1 7 7 6 6 6 8 6 8 6 6 8 6 6 6 6 7 7 7 8 6 6 6 6	2955x155 2955x155 2955x155 2955x155 2935x155 2935x155 292x6 29855x155 2940x130 2950x140 2950x140 2950x140 2950x140 2950x140 2950x140 2950x140 2950x140 2950x140 2950x135 296x7 2920x120 29835x155 2940x130 2950x140 2910x130 2920x155 2940x130 2950x140 2910x130 2920x155 2940x130 2920x155 2940x155 2950x155 2950x15	P1025x185d	4-3.54x5.90 4-3.93x5.90 4-3.14x5.11 4-3.14x5.11 4-3.54x5.11 4-3.54x5.11 4-4.33x5.51 4-4.33x5.51 4-4.33x5.51 4-4.33x5.51 4-4.33x5.51 4-4.33x5.51 4-4.33x5.51 4-4.33x5.51 4-2.83x3.93 4-3.54x6.29 6-4.1x5.51 4-2.75x4.72 4-3.74x5.51 4-2.99x5.11 4-2.99x5.11 4-2.99x5.11 4-2.99x5.11 4-3.34x5.11 4-3.34x5.51 4-2.55x6.11 4-2.95x5.11 4-2.95x5.11 4-2.95x5.11 4-3.34x5.55 4-3.34x5.55 4-3.34x5.55 4-3.34x5.55 4-4.1x5.51 4-4.1x5.51 4-4.1x5.51	F L L L L L L L L L L L L L L L L L L L	4 Ch 4 Pin. 6	N C abe	ThS. ThS. ThS. Pu. Pu. Pu. Pu. Pu. Pu. Pu. Pu. Pu. Pu	Sol Sol Zen Sol So	G. V. V. V. V. G.	M M M M M M M M M M M M M M M M M M M	Opt Opt Opt Opt Opt Opt Yes	Opt Opt Opt Opt Opt Yes	MD.	Sep. Sep. Sep. Sep. Sep. Sep. Sep. Sep.	444444444444444444444444444444444444444	RECCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC	Met	Ch. Ch. Sp. Wo More Sp.	IR. IR. IFR. IFR. IFR. IFR. IFR. IFR. IF	IT. IFR. IFR. IR.	WS. WS. WWW. WWW. WWW. WWW. WWW. WWW. W	CS C
iovy iovy iovy iovy iovy rossel rossel basse lasse liesse liesse liesse liesse liesse liesse liesse liesse liesse, 6 wheels	11/2 3 4 21/2 4 2 3 11/2 3 4 5 5	14 14 19 15 13 18 12 12 15 15 15 15	4 58 6 64 5 60 8 64 7 55 2 55 7 59 7 59 7 58 7 67 7 69	P32x6 P855x155 P910x210 P34x7 P955x155 P1025x185 P355x155 P855x155 P855x155 P855x155 P835x135 P34x7 P855x155 P34x7 P855x155	P32x6 P855x155d P910x210d P34x7d P955x155 P1025x1855 P32x6d P855x155 P855x155 P855x155 P835x135d P34x7d P855x155d P34x7d P855x155d	4-3.34x5.33 4-3.34x5.33 4-4.33x7.08 6-3.62x4.73 4-3.54x5.96	2 F 2 F 8 F 0 L 0 L 1 I 1 I 1 I	4 Pin. 4 Pin. 2 Pin. 3 Pin. 4 Pin. 8 Pin. 8 Pin. 4 Pin. 9 Pin. 1	abc. abc. abc. abc. abc. abc. abc. abc.	ThS.	Sol Sol Sol Sol Zen Zen Zen Zen Zen	G V G G	M M M M M B. M M M M	Yes. Yes. Yes. Yes. Yes. Yes. Yes. Yes.	Yes. Yes. Yes. Yes. Yes. Yes.	Co. Co. MD. MD. MD. MD. MD. MD. MD. MD. MD. MD	Sep. Sep. Sep. Sep. Sep. Sep. Eng	444444444444444444444444444444444444444	R C C C C	2 Met 2 Met 3 Fab 3 Fab 2 Fab 2 Fab 2 Met 2 Met 2 Met 2 Met	Wo. Wo. DR. DR. DR. DR. DR. DR. DR. DR.	IFR. IFR. IFR. IFR. IT. IFR. IT. IFR. IFR. IFR.	IFR. IFR. IR. IR. IR. IR. IR. IR. IR.	SN SN SN WS. WS. WS. WS. WS. WS. WS. WS. WS.	

Truck Chassis



		GE	NE	RAL INFO	RMATION				ENG	INE					ECTR SYSTE			TRA	NSI	MIS	SION			RUN	NING AR	
				Tire and	Size Type		-	Slock				Fue						Ge	arse	t			Bra	kes	e e	
MAKE AND MODEL	Tons Capacity	Wheelbase (In.)	Track (In.)	Front (m.m. or inches)	Rear (m.m. or inches)	No. of Cylinders Bore and Stroke	Valve Arrangement	Cyls. Cast in One Block	Camshaft Drive	Oiling System (Pressure to)	Water Circulation	Carburetor Make	Fuel Feed	Current Source	Starter Fitted?	Generator Fitted?	Clutch Type	Location	No. Fwd. Speeds	Fostion of	Universal Joints	Final Drive	Foot Type and Location	Hand Type and Location	Steering Gear Type	Wheele Tree
Miesse, & wheels Minerva, Trac Minerva. Minerva. Minerva. Minerva. Minerva. Minerva. Pipe. Pipe. Pipe, Trac. (P)	6 10 2 4 5 2	110 119 145 169 198 165 171	64 66 61 64 68 68 63 67	P36x8 P955x155 P38x7 P855x155 P955x155 P38x7 P38x7 P855x155 P1025x185	P36x8 P955x155d P38x7d P855x155d P955x155d P38x7d P38x7d P855x155 P1025x185d P1025x185d	BE 8-3.14x5.11 4-3.54x5.51 4-4.33x5.51 4-3.54x5.51 4-4.33x5.51 4-4.33x5.51 4-4.33x5.51 4-3.93x7.06 4-4.33x5.51 6-4.72x6.26	I I I SI I SI I SI I SI I SI I SI	8 4 4 4 4 4 4 3	Pin Ch Ch Ch Ch Ch Pin Pin	aaaabeabeabeabeabeabe.	Pu.	Zen Zen Zen Zen Zen Zen Zen Zen Zen	V V V V V V	M.M.M.M.M.M.M.M.M.M.M.M.	Yes Opt Opt Opt Opt Yes Yes	Yes Yes Yes Yes Yes Yes Yes	MD.	Eng. Eng. Eng. Eng. Eng.	4 4 4 4 4 4 5	C C	3 Met. 2 Fab. 2 Fab. 2 Fab. 3 Fab. 3 Fab. 2 Met. 2 Met. 2 Met.	DR Sp DR DR		IT IR ITF ITF	CL CL CL	D.D.D.
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Continental Gasoline Trucks



MAKE AND MODEL		GEN	ERAL INFO	ENGINE							ELECTRICAL SYSTEM			TRANSMISSION					RUNNING GEAR					
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	Tons Capacity	Wheelbase (In.)	Front (m.m. or inches)	Rear (m.m. or inches)	No. of Cylinders Bore and Stroke	Valve Arrangement	Cyls. Cast in One	Camshaft Drive	Oiling System (Pressure to)	Water Circulation	Carburetor Make	Fuel Feed	Current Source	Starter Fitted?	Generator Fitted?	Clutch Type	Location	No. Fwd. Speeds Position of Lever	Universal Joints	Final Drive	Foot Type and Location	Hand Type and Location	1 2	Wheels Type
Mannesm'nn-Mulag US Mannesm'nn-Mulag JS Nacke. 2½ Nacke. 3½ Nacke. MA Nacke. 5 Nacke. S Nacke. KL Na.G. CA Richard & Co. CA Richard & Co. CA Richard & Co. CA Solve (6-wheel drive) Stoewer. LF6 Vomag. 3C45 Vomag. OV57 Vomag. OV57 Vomag. OV59 Vomevrke.	5 3 1 2 4 4 7 7 7 2 8 5 5 7 1 5 7 6 3 4 4 1 1 5 7 7 6 6 6	212 149 157 169 169 142 285 157° 204° 222° 128 151° 151° 151° 151° 111 118 140 162 1377 172 177 224 232	99 C1000x15 99 P40x8 94 P22x6 94 P22x6 97 C970x130 97 C970x130 97 C985x150 97 P40x10° 96 C970x150 96 C970x150 96 P30x5 97 P30x6 97 P30x6 97 P30x7 9	P40x8d P30x5.25 P30x5.5 P32x6.d P32x6.d P28x5.25 C670x130d C670x130d P33x6.20d P30x6 C985x150d C1900x170d P36x8d	6-3, 93x5, 5; 4-4, 25x6, 3 4-4, 92x6, 3 6-4, 52x5, 5; 4-5, 11x6, 6; 6-4, 25x6, 2; 4-4, 72x6, 6; 6-4, 25x6, 2; 4-5, 31x6, 6; 6-4, 25x6, 2; 4-3, 50x4, 1; 4-3, 50x4, 1; 4-3, 50x4, 1; 4-3, 50x4, 2; 4-3, 50x4, 2; 4-2, 91x3, 5, 4-3, 93x6, 2; 4-2, 91x3, 5, 4-2, 91x3, 5, 4-3, 93x6, 2; 4-4, 52x7, 0, 4-4, 52x7, 0, 4-4, 52x7, 0, 4-5, 11x6, 2, 4-5, 11x	L	6622222462226644100011111100000000000000	Ch. Sp. Sp. Sp. Sp. Sp. Sp. Sp. Sp. Sp. Sp	ab.	Pu.	Zen. Zen	V. V. V. V. V. V. V. V. G.	M. M	Yes. Yes. Yes. Yes. Yes. Yes. Yes. Yes.	Yes	Co. Co. Co. SP. MD. MD. MD. MD. MD. MD. MD. MD. MD. MD	Sep. Sep. Sep. Sep. Sep. Sep. Sep. Sep.	4 C. 3 C. 4 R. 4 R. 4 C. 3 C. 3 C. 3 C. 4 R. 4	Met Met Fab Met Fab Fa	Dr. Wo Wo Wo Dr. Wo Dr. Dr. Dr. Dr. Dr. Sp. Wo Wo Dr. Dr. Sp. Dr. Dr. Dr. Dr. Dr. Dr. Dr. Dr. Dr. Dr	IF.	IR. IR. IR. ET ET ET ET IR. ITR TR TR TR IR. IR. IR. IR. IR. IR. IR. IR. IR. IR	WS. WS. SN. SN. SN. SN. WS. WS. WS. WS. SN. SN. SN. SN. SN. SN. SN. SN. SN. S	CS. D. D. CS. CS. CS. CS. CS. CS. CS. CS. CS. CS
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ABBREVIATIONS
a—Main Bearings
Ama—Amac
B—Balloon (Tires)
B—Battery
b—Lower Rod Bearings
Be—Bevel Gear
C—Center (Gear Lever)
C—Charcoal Gas (Fuel Feed)
C—Camshaft Bearings
CA—Compressed Air
Ch—Chain
CL—Cam and Lever
Cla—Claudel
Co—Cone
Coz—Cozette
CS—Cast Steel
d—Dual
d—Wristpins (Lubrication)
Dd—Dead

DP—Dual Dry Plate
e—Timing Gear Case
Dr—Double Reduction
EG—External Ring Gear
Eng—Unit with Engine
ER—External Transmission
(F)—Front Wheel Drive
F—"P" Head
Fab—Fabric
FF—Full Floating
FR—Front and Rear
FT—Front and Transmission
A Rear
G—Gravity
GE—Gas-Electric
He—Helical Gear
HCS—Hollow Cast Steel
HS—Hollow Spoke
I—Valve in Head

IF—Internal Four Wheels
IFR—Four Rear Wheels
IFR—Four Rear Wheels
IG—Internal Ring Gear
IT—Internal Transmission
L—'L' Head
M—Magneto (Current Source)
May—Maybach
mb—Magneto and Battery
MD—Multiple Disk
Met—Metal
Opt—Optional
(P)—Producer Gas
Pal—Pallas
Pin—Pinion
Pla—Planetary
P—Pneumatic (Tires)
P—Pressure (Fuel Feed)
Pu—Pump
R—Right (Gearshift Lever)
R—Rear (Brakes)
Ren—Renbault

S—Solid
S—Spiral Bevel
Sep—Separate Unit
SI—Sleeve Valve
Smi—Smith
SN—Serew and Nut
So—Spur Gear, Overhead
Camshaft
Sol—Solex
Sp—Spiral Bevel (Rear Axle)
Sp—Spiral Bevel (Rear Axle)
Sp—Spiral Bevel (Rear Axle)
Sp—Spiral Bevel
Sp—Spiral Bevel
Sp—Spiral Bevel
T—Splash
St—Straight Bevel
Sw—Steering Wheel
Th—Thermo-Syphon
T—Transmission
TF—Transmission and Front
Wheels

TR—Transmission and Rear
Wheels
Tract—Tractor
TT—Tractor
TT—Tractor Truck
V—Vacuum
Var—Various
WN—Worm and Nut
Wo—Worm Drive
WCS—Webbed Cast Steel
WS—Worm and Sector
WW—Worm and Wheel
Zen—Zenith

—Others also

*—Driver beside Engine
†—With Auxiliary Magnetic
\$—All British Trucks are 4-Cyl.
unless noted



British Trucks



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OF TRUCK	Load Capacity Long Tons	Wheelbase (Ins.)	Track (Ins.)	Type	Front (Ins.)	Rear (Ins.)	§Bore and Stroke (Ins.)	Valve Arrangement	No. of Cylinders Cast in One Piece	Camshaft Drive	Water Circulation	Oiling System Pressure to	Carburetor Make	Fuel Feed	Ignition Type	Generator Fitted?	Starter Fitted?	Clutch Type	Location	No.Forw'dSpeeds	Control Lever	Universals Type	Type	Final Drive	Gear Ratio on Direct	Hand	Foot	Four Wheel Brake Operation	Wheels Tone
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MAKE AND MODEL	Designed For	Number of Cylinders, Bore and Stroke (Ins.)	Rated H.P. (N.A.C.C.)	R.P.M. at Maximum Brake H.P.	Piston Displacement (Cu. Ins.)	Compression Ratio	Number of Point Suspension	Head	No. Cast in One Piece	Integral with Cylinders?	Material	Material (Lower Half)	Arrangement	Head Material	Clear Diameter (Ins.)	Lift (Ins.)	Туре	Non-Metallic Gear Used On?	Material	Length (Ins.)	Weight (with Pins, Rings & Bushings) Ozs.	Diameter and Length (Ins.)	Pin Bearing sui.	Number of Rings per
Automatic J55/4 Automatic M Automatic N Automatic N Automatic N Budanic R Brennan B76 Buda GLe Brennan B78 Buda WTU Buda EBU Buda EBU Buda F18 Buda B18 Buda B2 Buda B3 Buda B3 Buda B5 Buda B6 Buda JV-Buda B8 Buda J8-Buda J	T& Tr. T, Tr & B. T, Buses Trucks Buses & T Trucks Trucks Buses & T Trucks Trucks Buses & T Trucks Trucks Trucks Trucks Trucks Trucks Trucks Trucks Trucks Tractors Trucks T & Buses Trucks Truc	4-51/2x7 4-61/2x8 4-71/2x8 4-71/2x19 4-81/2x19	32.4 48.60 22.50 25.60 28.90 29.90 2	48-800 62-675 775-540 100-500 70-1800 114-2200 70-1800 114-2200 43-1800 443-1800 443-1800 48-1856 60-1700 50-1400 61-1000 135-1000 1127-1800 1275-1200 1275-	510,5	$\begin{array}{c} 4.4 \\ 0.0 \\$	333333444444444444443333333333333333333	Int. Det. Det. Det. Det. Det. Det. Det. De	66668668644111466	Sep. Sep. Sep. Sep. Sep. Sep. Sep. Sep.	Iron.	Iron.		Sil. Tun Ast Ast Ast Ast Ast Ast Ast Ast Sil.e.	1. 964 (1) (2) (2) (2) (2) (2) (2) (2) (2) (2) (2		Heli Chain Chain Heli Heli Chain Heli	None	CI.	7.00 9.00 12.31 10.50 12.31 5.50 6.25 6.25 6.25 6.25 6.25 6.25 6.25 6.25	100.0 0 358.0 752.0 938 872 93 442 464 46.0 1722 94 144 48 172 190 7.7 168 172 169 172 174 175 175 175 175 175 175 175 175 175 175	1. 43x4 .62 1. 43x4 .62 1. 68x1 .12 2. 00x7 .12 2. 43x8 .00 1. 17x3 .87 1. 17x4 .00 1. 17x3 .87 1. 10x3 .44 1. 12x3 .68 1. 12x3 .68 1. 12x3 .68 1. 12x3 .87 1. 12x3 .68 1. 12x3 .87 1. 12	Flo	

ABBREVIATIONS:
a—Main Bearings.
Accx—Accessories Drive.
Al—Aluminum Alloy.
Als—Aluminum Steel with Strut.
ASt—Alloy Steel.
b—Connecting Rod Bearings.
B—Buses

Ball—Ball Bearing.
c—Camshaft Bearings.
C—Cars.
Car—Carbon Steel.
Cam—Camshaft.
Cent—Centrifugal.
ChVa—Chrome Vanadium.
C&H—Chain and Helical Gear.

Crac—Crankshaft and Accessories.
ChN—Chrome Nickel Steel.
Chr—Chromium Steel.
Cl—Cast Iron.
Cran—Crankshaft.
d—Wrist Pins.
Det—Detachable.
Dur—Duralumio

e—(Oiling System)—Timing Gear Case.
e—Exhaust.
Ece—Eccentric.
f—Rocker Arm.
Flo—Floating.
Heli—Helical.
l—Both valves in head.
o—Valve in Head; overhead camshaft.

Engines

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Number of Rings per Piston

9



	NEC ROD	TING S				CI	RANKSHA	FT			OILI SYST		CIRCUL	ER	GO	OVERN	OR		MISC	ELLA	NEOL	IS			
Materiai	Center to Center	Length (Ins.) Weight (with Bush-	rial	Tatella	Offset (Ins.)	Counter Balances Used?	Diameter and Length (Ins.)	Number	Main Bear	er and	Pressure to	Pump Type	Type	Pump Type	Furnished?	Туре	P.M.)	Speed at which Maximum Torque is Developed (R.P.M.)	Weight (without Carbu- reter or Ignition) Lbs.	Adapted for Use of Kerosene?		erall sions		Bell Housing Provided? S.A.E. Numbers	MAKE AND MODEL
ar. ar. ar. ar. ar. ar. ar. ar.	14.0 17.0 21.1 11.1 13.1 11.1 11.1 12.1 13.1 14.1 11.1 12.1 13.1 14.1 11.1 19.1 10.1 14.1 10.1 13.1 14.1 10.1 11.1 10.1 10.1 10.1 10.1 10	1	0 Car Ca	No No No No No No No No	one on	No	2 .25x2 .75 2 .75x3 .00 3 .50x4 .55 2 .50x2 .00 2 .50x2 .00 2 .50x2 .00 2 .50x2 .00 2 .50x2 .00 2 .50x3 .00 2 .50x3 .00 2 .50x3 .12 2 .49x3 .00 2 .50x3 .12 2 .49x2 .12 2 .49x3 .00 2 .50x3 .12 2 .49x2 .12 2 .50x1 .81 3 .49x3 .31 3 .49x3 .31 2 .99x2 .22 2 .50x1 .81 2 .50x3 .12 2 .50x3 .12 2 .50x3 .13 2 .25x3 .13	5555334433333333444444443333333335574444333334447	2.25x4.75 2.75x6.75 3.00x7.00 3.50x6.50 2.25x4.25 2.25x4.25 2.12x3.09 2.12x3.09 2.12x3.09 2.12x3.09 2.12x3.50 2.50x2.12 2.50x2.12 2.50x2.12 2.50x2.12 2.50x2.12 2.50x3.187 3.50x4.75 2.25x4.12 2.50x3.33 3.00x3.33 2.12x3.50 2.12x3.30 2.12x3.50 2.12x3.30 2.12x	2 , 25x4 , 00 2 , 75x5 , 00 3 , 50x5 , 12 2 , 25x3 , 30 3 , 50x5 , 12 2 , 25x3 , 30 2 , 75x3 , 40 2 , 12x2 , 94x3 , 44 2 , 37x4 , 40 2 , 50x3 , 50 3 , 50x4 , 75 3 , 50x4 , 75 3 , 50x4 , 75 2 , 50x2 , 75x2 , 75 2 , 25x2 , 30 3 , 25x4 , 50 3 , 25x4 , 50 2 , 25x2 , 60 2	Splash	Gear.	Pump.	Cent.	Stk. Stk. Stk. Stk. Stk. Stk. Stk. Opt. Opt. Opt. Opt. Opt. Opt. Opt. Opt	Cent. Cent. Cent. Opt. Opt. Opt. Opt. Opt. Opt. Opt. Op	Opt Opt Opt Opt Opt Opt I500 1650 2000 1800 1600 1600 1600 1600 1200 1200 1200 12	800 675 560 1350 1300 1000 1000 1050 1050 850 800 800 800 1200 1200 1000 1000 1000 1	1650 2700 600 750 1295 640 840 988 988 914 9140 1080 1080 1140 1080 1080 1140 1080 1150 1150 1150 1150 1150 1150 115	Yes	85%4 26 30 32 21 25%4 25%4 25%4 25%4 25%4 25%4 25%4 25%4	1912 43 48 53 33 43 32 44 33 33 43 33 43 41 44 49 44 44 44 44 44 44 44 44 44 44 44	35142 7033 8612 8612 8612 8612 8612 8612 8612 8612	None None None None 1 3 3 3 3 3 3 3 1 1 1 1 1 3 1 0,0 3 0 pt None 0 pt 1 1 1 2 1 3 1 1 3 3 3 3 3 3 3 3 3 3 3 3	Automatic. Automatic. Automatic. Automatic. Automatic. Brennan Buda Ki Buda Ki Buda Ei Buda Fi Buda B Buda J Buda B Buda J Buda J Buda J Buda J Buda J Buda C G Bufalo B Bufale C G Bufalo B Bufale C G Bufalo B Bufale C Climax I Climax I Continental

Ind—Industrial.
Int—Integral.
L.—Valves at side. ("L" head).
Mag—Magnesium.
Nicl—Nickle Iron
NicS—Nickei Steel.
NP—No provision.
Opt—Optional.

PS—Pressed Steel.
Rail C—Rail Cars.
Sep—Separate.
Sil—Silerome Steel.
Sl—Sleeve.
Spec—Special.
SS—Semi Steel.
SI—Sleeve.

Pist-Piston.

Spec—Special.
SS—Semi Steel.
SpP—Splash with pressure.
Sik—Standard Equipment.
Suct—Suction.
I—Trucks.
ThS—Thermo-siphon.
Tr—Tractors.

Tun—Tungsten.
Var—Various.

Optional.
On-Tunes also.
Inlet valve only.
Inlet valve o

Er

Material

In L-M. Ni Ni Ni Or



American Stock

					ns.)		ue	CYLI		CR	NKC	SE		VAL	VES		FRO END I	ONT DRIVE			PISTO	ONS		
MAKE		ers, Bore	C.C.)	E .	ent (Cu. In		Suspension		Piece	Uppe	Half	Half)			(Ins.)						, 0zs.	Piston P	ins	per
AND MODEL	Designed Fer	Number of Cylind and Stroke (Ins.)	Rated H.P. (N.A.C.C.)	R.P.M. at Maximum Brake H.P.	Piston Displacement (Cu. Ins.)	Compression Ratio	Number of Point	Head	No. Cast in One I	Integral with Cylinders?	Material	Material (Lower	Arrangement	Head Material	Clear Diameter (I	Lift (Ins.)	Type	Non-Metallic Gear Used On?	Material	Length (Ins.)	Weight (with Pins, Rings & Bushings)	Diameter and Length (Inc.)	Pin Bearing In	Number of Rings Pieten
Jackson. J-A John Deere. D John Deere. 6P ILeRoi. K ILeRoi. 2C ILeRoi. MR & Light. H Lever (Powell) AFI Lycoming C4 Lycoming C4 Lycoming MS Lycoming TI Lycoming TI Lycoming G5 Lycoming G7 Lycoming G7 Lycoming HI Lycom	Tractors. Cars, T, Tr. C, T, Tr. Buses. T, T, & B. Trucks & B. Trucks & B. Trucks. Buses, Tr. T & Buses. T & T & Buses. T & T & Buses. T & T & Tractors. T & Tractors. T & Buses. T & Tractors. T & Buses. T T & T & Buses. T T & T & Buses. T T & T & T & T & T & T & T & T & T & T	2-5-5-x6 4-23-x4 4-23-x4-4 2-3-3-x4-4 6-3-3-x5 4-4x5 4-4x5 4-4x5 4-4x5 6-2-3-x4-4 6-3-3-x4-4 6-3-3-	42.00 32.40 63.0 73.6 63.00 48.40 28.90 48.40 62.50 84.1 96.10	140-1300 38-2150 44-2000 44-2000 60-3400 57-3200 56-2700 60-2707 71-2600 75-3400 85-3400 115-3300 115-3300 115-3300 115-3300 115-300 120-1200 120-1200 140-1200 140-1200 140-1200 140-1200 140-1500 150-1500 175-1500 175-1500	149.3. 220.5. 220.5. 251.3. 185.6. 224.6. 228.4. 288.4. 369.4. 369.5. 369.6. 381. 381. 460. 381. 480. 461. 381. 480. 381. 480. 381. 480. 381. 381.	3 9 4 4 4 4 4 9 9 6 6 9 6 6 8 4 9 8 4 4 7 9 3 3 5 7 3 4 4 1 7 3 3 3 3 3 5 3 4 4 7 7 3 3 5 7 3 4 4 1 7 3 3 3 3 3 5 6 9 6 9 6 9 6 9 6 9 6 9 6 9 6 9 6 9 6	Dt. 44 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	Det. Det. Det. Det. Det. Det. Det. Det.	222442414446666668888814424444226444211112222222222	Sep. Int. Int. Sep. Sep. Sep. Int. Int. Sep. Sep. Sep. Sep. Sep. Sep. Sep. Sep	Iron.	Iron. Iron. Iron. Iron. Iron. Iron. Iron. Iron. Iron. Al. PS. PS. PS. PS. PS. PS. PS. PS. PS. PS		CI CI CI CI CI CI Sil-e. Sil-c. CI. CI. CI. CI. CI. CI. CI. CI. Sil. Sil. Sil. Sil. Sil. Sil. Sil. Sil	1.25°	.31 .34 .34 .31 .31	Chain. Chain. Chain. Spur. Spur. Spur. Heli. Heli. Heli. Chain	None. None. None. None. None. None. None. None. Crac. Crac. Crac. Crac. Crac. Crac. Crac. Crac. Crac. None. Idler. Idler. Idler. Idler. None.	CI.	7.00 3.50 3.50 3.50 6.00 4.07 4.07 4.12 4.12 4.12 3.50 3.50 3.50 3.50 3.50 3.50 3.50 3.50	276.0 (164.0 (16	75x2.87 75x2.87 75x3.00 2.00x2.63 1.12x3.50 1.12x3.50 1.12x3.50 1.12x3.50 1.12x3.30 1.12x3.20 87x1.44 87x3.00 1.12x2.97 1.12x3.34 87x3.30 1.12x2.97 1.12x3.34 87x2.81 75x3.63 75x2.93 62x2.50 1.50x4.00 1.62x4.25 1.50x4.00 1.62x4.25 1.50x4.00 1.62x5.00 1.62x5.00 1.62x5.00 1.25x3.87 1.62x5.00 1.25x3.87 1.62x5.50 1.18x5.50 1.18x5.50 2.19x7.19 1.25x3.75 1.50x5.19	Rod Rod Rod Rod Rod Rod Pist Pist Pist Pist Pist Pist Pist Pist Pist Pist Pist Pist Pist Pist Pist Pist Pist Pist Rod Pist Pist Pist Rod Ro	4 4 4 4 4 4 4 4 3 3 3
Waukesha X. Waukesha Di Waukesha El Waukesha El Waukesha GR Waukesha GR Waukesha GR Waukesha GA Waukesha GA Waukesha GA Waukesha GA Waukesha GC Waukesha GX Wisconsin SI Wisconsin RAU, RC Wisconsin RB Wisconsin H, H Wisconsin Wisconsin Wisconsin Wisconsin Wisconsin GC Wisc	UT, B, Tr. UT, Tr. L Tractors. L T & Buses. B T & Buses. B T & Buses. S T & Buses. S T & Buses. UT & Buses. UT & Buses. K Rail C L Rail C L T & Buses. K T T C, T, B, Tr. UC, T, B, Tr. T Cars & B. T, B & Tr. K T, Tr. X T, Tr. X T, Tr. X T Tractors. I Tractors. I Tractors. I Tractors.	4-4/5x6/4 4-5x6/4 4-6x6/5 6-43/8x5/6 6-43/8x5/6 6-41/9x5/6 6-41/9x5/4 6-61/9x8/6 6-71/9x8/6 6-71/9x8/6 6-73/9x8/6 6-73/9x8/6 6-73/9x8/6 6-73/9x8/6 6-3/9x8/6 6-3/9x8/6 6-3/9x8/6 6-3/9x8/6 6-3/9x8/6 6-3/9x5/6	32.4 40.00 57.6 60 48.60 48.60 48.4 4 104 125 48.60 33.7 25.33 7.48.60 33.7 29.4 4.1 29.4 4.3 33.7 44.1 29.4 4.3 33.7 34.3 34.3 34.3 34.3 34.3 34.3 34.3 34.3 34.3 34.3 34.3 34.3 34.3 34.3 34.3 34.3 34.3 34.3 34.3 34.3 34.3 34.3 34.3	34 <u>3</u> -2500 53-1500 62-1350 127-1900 99-200 76-250 78-2000 53 <u>3</u> -2000 61-2000 61-2000 64-1600 64-1600 67-2000 67-2000 67-2000 67-2000 67-2000 67-2000 67-2000 67-2000 67-2000 67-2000 67-2000 67-2000 68-2000 68-2000 68-2000 68-2000 68-2000 68-2000 68-2000 68-2000 68-2000 68-2000 68-2000	397, 490, 735 464 677, 735 464 677, 735 464 677, 735 464 677, 735 464 677, 735	0 6 8 8 0 0 0 5 5 5 0	00 00 00 00 04 04 04 00 00 00 00 00 00 0	Det. Det. Det. Det. Det. Det. Det. Det.	4 4 4 2 2 2 6 6 6 6 6 6 6 6 6 6 6 6 6 6	Sep. Sep. Sep. Sep. Sep. Sep. Sep. Sep.	Iron. Iron. Al. Al. Iron. Iron	Iron. Iron. PS. Al. PS. Iron. PS. PS. Al. PS. Al. PS. Al. Iron. Iron. Iron. Iron. Iron. Iron. Iron. Iron. Iron. PS. PS. PS. PS. PS. PS. PS. PS. Iron. Al. PS. Iron. Al. PS. Al. Iron. Iron. Iron. Iron. Iron. Iron. Iron. PS		Sil Sil Sil Sil ChN Sile Sil Sil Sil Sil Sil Sil Sil Sil	1.50 2.12 2.12 1.50 1.93 1.31 1.50 1.62 1.53 2.06 2.50 1.53 2.25 1.50 No	.38 .34 .34 .38 .38 .38 .38 .38 .38 .38 .44 .44 .38 .26 .43 .37 .No	Heli	None.	CI	4.22 6.11 5.99 4.00 4.77 3.77 4.00 4.21 6.22 6.22 3.99 4.44 5.91 4.00	5 54.7 5 54.7 99.0 10 32.0 10 32.0 10 59.5 10 50.0 10 50.0	1.63x3.09 1.06x	Pist. Pist. Pist. Pist. Pist. Pist. Pist. Pist. Pist. Rod. Rod. Rod. Rod. Rod. Rod. Rod. Rod	50 50 50 50 50 50 50 50 50 50 50 50 50 5

ABBREVIATIONS:
a—Main Bearings.
Acex—Accessories Drive.
Al—Aluminum Alloy.
Als—Alluminum Steel with Strut.
ASt—Alloy Steel.
b—Connecting Rod Bearings.
B—Buses.

Ball—Ball Bearing.
c—Camshaft Bearings.
C—Cars.
Car—Carbon Steel.
Cam—Camshaft.
Cent—Centrifugal.
ChVa—Chrome Vanadium.
C&H—Chain and Helical Gear.

Crac—Crankshaft and Accessories.
ChN—Chrome Nickel Steel.
Ch—Chromium Steel.
Cl—Cast Iron.
Cran—Crankshaft.
d—Wrist Pins.
Det—Detachable.
Dur—Duralumin.

e—(Oiling System)—Timing Gear Case.
e—Exhaust.
Ecc—Eccentric.
f—Rocker Arm.
Flo—Floating.
Heli—Helical.
I—Both valves in head.

ck

Number of Rings per Pisten

3 3

3 3 3

Engines—Continued



CON	NECT RODS	ING			CI	RANKSHA	FT			OILI		CIRCUL	ER	GC	VERNO	OR		MISC	CELLA	NEOL	JS			
rial	er to Center	Weight (with Bush- ings and Cap) Ozs.	erial	et (Ins.)	nter Balances	Diameter and Length (Ins.)	nber	Main Bear	er and (Ins.)	Plessure to	Pump Type		Pump Type	Furnished?		um Gove (R.P.M.)	Speed at which Maximum Torque is Developed (R.P.M.)	Weight (without Carbu-	Adapted for Use of Kerosene?	men	erall sions	(Ins.)	Bell Housing Provided? S.A.E. Numbers	MAKE AND MODEL
Car	15.3.3 8.00 8.00 12.00 1	7	ChN. ChN. NieS. NieS. Car. Car. Car. Car.	None	No Yes Yes No Yes No No.	2.25x2.503.3 2.35x2.503.3 2.25x2.503.503.503.503.503.503.503.503.503.503	22222755544444445555522225333444423333557355334	1.44x2.75 3.00x5.00 2.50x3.18 2.87x3.43 2.87x3.43 2.50x3.18 2.87x4.48 2.87x4.48 2.87x4.48 2.87x3.43 2.25x3.06 2.87x3.9 3.00x6.12 3.50x6.19	3. 00x5. 00 3. 00x5. 00 51. 75x2. 75 1. 75x2. 75 1. 75x2. 75 1. 75x2. 75 1. 87x2. 75 1. 87x2. 75 1. 87x2. 75 1. 87x2. 75 2. 12x2. 62 2. 12x2. 62 2. 12x2. 62 2. 12x2. 62 2. 12x2. 62 2. 2. 37x2. 75 2. 37x2. 37 2. 37x1. 87 2. 37x2. 37 2. 37x2. 37 2. 37x2. 37 2. 37x2. 37 2. 37x2. 37 2. 37x2. 75 2. 37x2. 25 2. 37x2. 37 2. 37x2. 37 2	abed abd abd abd abed abec abec abec abec abec abec abec abec	Gear. Gear. Fist. Fist. Gear.	ThS ThS ThS ThS ThS ThS Pump. ThS Opt Pump.	Cent. None. None. None. None. None. None. Cent.	Stk. Stk. Stk. Stk. Stk. Stk. Stk. Stk.	Cent. Cent. Cent. Cent. Cent. None. None. None. None. None. None. None. Cent.	1200 8000 1030 1600 1000 1000 1000 1000 1000 1	900 800 1500 1100 1200 1100 1000 1100 800 800 800 800 800 80	1050	Yes Yes Yes Yes Yes Yes No Yes No No No	15 15 18 26 20 20 20 21 22 25 25 25 25 25 25 25 25 25 25 25 25	50 3034 3114 2814 2814 304 304 2814 2814 2814 2814 2814 2814 2814 281	41848484844444444444444444444444444444	2 No	Jackson J-A John Deere S LeRoi K: LeRoi ZC, K LeRoi AC C C Lerroin MR & M Light H Lycoming C Lycoming WS Lycoming WS Lycoming TI Lycoming
Car. Car. Car. Car. Car. Car. Car. Car.	13 .2 .13 .2 .10 .2 .13 .2 .13 .2 .13 .2 .13 .2 .13 .2 .13 .2 .13 .2 .14 .14 .15 .10 .4 .13 .19 .10 .12 .13	75 37 .65	Car. Car. Car. Car. Car. Car. Car. Car.	None	No	2. 50x2. 7: 2. 75x1. 7: 2. 75x2. 5: 2. 75x2. 5: 2. 75x1. 5: 4. 00x3. 7: 4. 00x3. 7: 4. 00x3. 7: 4. 00x3. 7: 2. 00x1. 5: 2. 00x1. 5: 2. 2. 25x3. 0: 2.	333374477777773333444443334444433344	2.25x2.00 2.00x1.87 2.37x2.75 2.37x3.25 3.00x3.00 3.00x1.88 3.50x2.50 3.00x1.87 4.50x5.00 4.25x5.00 2.37x1.62 2.37x1.62 2.37x1.62 2.37x1.62 2.25x3.00	2.00x2.50 2.50x4.00 3.00x3.03 3.00x3.03 3.50x3.50x3.50 3.00x3.00x3.00 3.50x3.50x3.50 3.00x3.00x3.00 3.00x3.00x3.00 4.25x5.50 4.25x5.50 2.37x2.75 2.2.37x4.00 2.50x2.75 2.37x4.00 2.50x2.75 2.2.37x4.00 2.50x2.75 2.2.75x3.00 2.37x3.00 2.37x3.00 2.37x3.00 2.37x3.00 2.37x3.00 2.37x3.00 2.37x3.00 2.37x3.00 2.37x3.00 2.37x3.00 2.37x3.00 2.37x3.00 2.37x3.00 2.37x3.00 2.37x3.00 2.37x3.00 3.37x3.00 3.37x3.00 3.37x3.00 3.37x3.00	abce abce abce abce abce abce abce abce	Gear Gear Gear Gear Gear Gear Gear Gear	Ths Pump.	Cent.	Stk. Stk. Opt. Opt. Opt. Opt. Stk. Stk. Stk. Opt. Opt. Opt. Stk. Stk. Opt. Opt. Opt. Opt. Opt. Opt. Opt. Opt	Cent. None. None. None. None. Opt. None.		1000 956 956 950 800 800 900 1200 700 800 800 800 800 800 800 800 800 8	1013 643 850 2056		301-301-301-301-301-301-301-301-301-301-	8 27 40 14 40 14 41 14 14 14 14 14 14 14 14 14 14 14	48	1, 2 1, 2 1, 2 1, 2 2 0pt 2, 3 000 000 3 3 3 3 3 2 2 2 000 000 3 3 3 3	Waukesha X Waukesha D Waukesha B Waukesha G Waukesha B Waukesha G Waukesha B Waukesha G Waukesha B Waukesha G Waukesha M

le—Valve in Head; overhead camshaft. Int—Integral. L—Valves at side. ("L" head). Mag—Magnesium. NicS—Nickel Steel. NP—No provision. Opt—Optional. Pist—Piston.

PS—Pressed Steel.
Rail C—Rail Cars.
Sep—Separate.
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Spec—Special.
SS—Semi Steel.

SpP—Splash with pressure.
Sik—Standard Equipment.
Suct—Suction.
T—Trucks.
ThS—Thermo-siphon.
Tr—Tractors.
Tun—Tungsten.

Var—Various.
*—Optional.
°—Others also.
†—Inlet valve only.
§—Pressure to all main crankshaft
and camshaft bearings.
\$—1928 Specifications:



American Stock

		_				GE		ATER E. Nos			G	EAR R	ATIO		PIT	MINAL CH OF ARS	(ACE OF ARS		AXLE HAFT		SPE	GE OF RING TERS		
MAKE AND		n Spring	Shaft			First		Fin Redu	nal action		First Reducti		Fin Redu						(_				by	
MODEL	Designed for	Maximum Load o Pads (Lbs.)	Maximum Drive S Torque (Lb. Ft.)	Type	Final Drive	Pinion	Gear	Pinion	Gear	Standard	Optional	Optional	Standard	Optional	First Reduction	Final Reduction	First Reduction	Final Reduction	Diameter at Dif- ferential End (Ins	Diameter at Whee End (Ins.)	Material S.A.E. No	Maximum	Minimum	Propulsion Taken	Torque Taken by
ams 75006 ams 75109 trk B320 trk B364 trk B510 trk B510 trk B721 tumbia 17000 tumbia 54000	Cars Trucks Trucks Trucks Trucks Cars Trucks Cars Trucks	3200 3600 6000 4500 3500 2000 8000 2000 3500 12000 2400 12000 3800 15000 6000 6000 6000 6000 4000 4000 4000	550 550 550 1000 530 775 400 530 330 460 680 1330 2850 900 900 900 900 1700 675 870 400 900 900 900 900 900 900 900 900 90	12F. 12F. 12F. 12F. 12F. 12F. 12F. 12F.	S B B B B B B B B B B B B B B B B B B B	2315 2315 2315 2312 2320 2320 2320 2320 2325 2315 2315 2315 2315 2315 2315 2315	2315 2315 2315 2315 2315 2315 2315 2315	None None None None None None None None None 2315 2315 2315 2315 2315 2315 2315 2315	None 2315 None None 2315 None	$\begin{smallmatrix} 4.44\\4.44\\4.44\\5.1\\5.1\\2.2\\3.5\\2.2\\3.5\\2.2\\3.5\\2.2\\3.5\\2.2\\3.5\\2.2\\3.5\\2.2\\3.5\\2.2\\3.5\\2.2\\3.5\\2.2\\3.5\\2.2\\3.5\\2.2\\3.5\\2.2\\3.5\\2.2\\3.5\\2.2\\3.5\\2.2\\3.5\\2.2\\3.5\\3.0\\3.0$	4.87 3.92 5.66 5.1 6.38 4.44 5.86 4.45 3.86 7.79 1.79 1.79 1.70 1.84 4.9 6.63 7.75 7.57 7.57 7.57 7.57 7.57 7.57 7.5	4.25 6.38 6.88 4.50 5.0 4.15 2.33 1.57 2.210 2.17 None 6.62 None 4.3° 4.3° 4.3° 4.3° 6.12° 5.111	None None None None None None None None None	None None None None None None None None None	5.0 4.5 4.25 3.80 3.4 4.75 3.4 4.50	None	1.00 1.19 1.25 1.69 1.50 1.50 1.50 1.50 1.50 1.50 1.25 1.50 1.25 1.50 1.25 1.50 1.25 1.50 1.25 1.50 1.25 1.50 1.25 1.50 1.25 1.50 1.25 1.50 1.25 1.50 1.25 1.50 1.25 1.50 1.25 1.50 1.25 1.50 1.25 1.50 1.25 1.50 1.25 1.50 1.25 1.31 1.31 1.31 1.31 1.31 1.31 1.31 1.37 1.25 1.31 1.31 1.31 1.31 1.35	None	1 111 1 125 1 .50 1 .75 1 .50 1 .25 1 .50 1 .25 1 .50 1 .25 1 .50 1 .12 1 .25 1 .50 1 .25 1 .50 1 .25 1 .50 1 .25 1 .50 1 .25 1 .50 1 .25 1 .50 1 .50	1.19; 1.19; 1.37; 1.97; 2.58; 1.37; 1.56; 1.75; 1.56; 1.75; 1.57; 1.57; 2.00;	3135 3135 3135 4130 4130 4140 4140 41440 41440 Mol Mol Mol Mol Mol Mol Mol Mol Mol Mol	37 37 37 42 40 40 40 41 40 41 40 40 41 41 40 40 40 40 40 40 40 40 40 40 40 40 40	38.5 38.5 38.5 37.3 36.5 37.1 37.1 37.1 37.1 37.1 37.1 37.1 37.1	Sp.	Sp.
Iisbury	Cars Cars Cars Cars Trucks	2300 13500 22500 22500 35500 7300 10000 11000 14000 11000 11000 11000 11000 11000 11000 14	Var. Var. Var. Var. Var. Var. Var. Var.	PRESERVED DE SERVED DE LE CONTROL DE LE CONT	SB. SB. Wo. Wo. Wo. Wo. Wo. SB. SB. Wo. Wo. Wo. Wo. Wo. Wo. D. R.	23120 2313 31120 3115 3115 3115 3115 3115 3115 3115 311	2315 Bro. 1 Bro. Bro. Bro. Bro. Bro. Bro. Bro. Bro.	None None None None None None None 2512.2512.2512.2512.2512.2512.2512.2	None. None. None. None. None. None. None. None. Spec.	4.45 4.88 4.50 8.75 5.25 5.25 5.25 6.00 8.75 6.20 6.17 7.75 6.20 6.17 7.75 6.20 7.76 9.0 2.30 2.30 2.30 2.30 2.30 2.30 2.30 2.	4 7 4 .75 8 .75 10 .00 6 .50 6 .	5.1 None None None None None 10.33 11.67 7.67 7.67 9.33 11.67 11.67 10.33 8.00 8.00 10.33 11.67 10.33 11.67 10.33 11.67 10.33 11.67 10.33 11.67 10.33 11.67 10.33 11.67 10.33 11.67 10.33 11.67 10.33 11.67 10.33 11.67 10.33 11.67 10.33 11.67 10.33 11.67 10.33 11.67 10.33 11.67 10.33 11.67 10.33 11.67 10.33 11.67 10.33 10	None None None	None	4.8 Spec Spec Spec Spec Spec Spec Spec Spec	None. None. None. None None None None None None 4-5 4-5 4-5 4-5 4-5 4-5 4-5 None None	1.25 Spec Spec Spec Spec 1.69 1.37 Spec Spec Spec Spec Spec 1.69 1.37 Spec Spec Spec Spec Spec Spec Spec Spec	None None None None None None None None 2.0 2.00 2.25 2.25 2.25 2.25 2.75 2.75 2.75	1. 25 1. 18 1. 37 1. 18 1. 37 1. 75 1. 75 1. 75 1. 75 1. 75 1. 75 1. 75 1. 75 1. 75 1. 75 1. 75 1. 75 1. 75 1. 75 1. 75 1. 75 1. 87	1.566 1.377 1.577	5135 4140 4140 33240 33240 33240 33240 33240 33240 33240 33240 33240 33240 33240 33140 33140 33140 33140 33140 33140 33140 33140 33140 33140 33140 33140 33140 33140 33140 33140	4234 4414 4134 4134 339 339 339 339 339 339 4334 410 40 40 40 4114 42 40 40 40 4114 41 40 40 40 40 40 40 40 40 40 40 40 40 40	39 39 ¹ / ₄ 42 ³ / ₆ 42 ³ / ₆ 39 38 38 38 38 38 38 36 36 36 38 38 38 38 36 36 36 36 36 36 36 36 36 36 36 36 36	Sp.	Sp. Sp.

ABBREVIATIONS: §—Gear Manufacturers A A—Above Axle B—Bevel

B A—Below Axle
B-L—Brown-Lipe
B-L-C—Brown-Lipe-Chapin
B-R—Ball and Roller

Bro-Bronze
Bu-Buses
C-Cars
CS-Cast Steel

D R—Double Reduction
Ext D S—External Driveshaft
Ext Rw—External Rear Wheels
Fair—Fairfield

F F—Full Floating
½ F—Semi-Floating
¾ F—Three-quarter Floating
H B—Helical Bevel

Hyp—Hypoid Hyd—Hydraulic Brakes I F—Inside of Frame I G—Internal Gear

Rear Axles

Provision for Radius Rods?

No...
Yes...
Yes...
No...
No..

No...
No...
No...
Yes...
Opt...
No...
No...
No...
No...
No...

Opt...
Opt...
No...

id aulic Brakes of Frame al Gear



-		DIFFERE	NTIA	_	SERVI	CE BE	RAKE		EMERGE	NCY I	BRAN	E			BI	EARING	GS							
DIVE	Location of Spring Pads	Make	Type	Number of Pinions	Type and Location	Diameter of Drum (Ins.)	Width (Ins.)	(Ins.)	Type and Location	Diameter of Drum (Ins.)	Width (Ins.)	Thickness sur	Location of Brake Shaft Arms	First Reduction Pinion	Final Reduction Pinion	At Differential	At Wheels	On Pinion Shaft	Axle Housing Material (S.A.E. No.)	Minimum Road Clearanc With Regular Tire Size (Ins.)	Tread (Ins.)	Weight (Lbs.)	Recommended Lubricant	MAKE AND MODEL
H	3 A 3 A 3 A Opt Opt Opt	New P. New P. New P. Frost. Frost. B-L-C. Fair New P. B-L-C.	B B B B B B B	2 2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	Int.Rw Int-Rw Int-Rw Int-Rw Int-Rw	15 15 16 16 16 12° 16	1.75 2 2.25 3.5 134		None Int-Rw.	No	No 21/4		I F	Roller. Roller. Ball Ball Ball Roller. Roller.	None	Roller. Roller. Roller. Roller. Roller.	Roller. Roller. Roller. Roller. Roller. Roller. Roller. Roller.	Roller. Roller. Ball Ball Ball Roller. Roller.	Ma I Ma I Ma I Steel Steel Spec Spec	81/8-30 81/8-30 81/8-32 81/8-34 93/8-30 9-32	58	320	No. F. No. F. Oil Oil Oil Oil	Adams
(C	Opt Opt Opt Opt A A A A A A	B-L-C. War. B-L-C. B-L. B-L. Frost. Frost.	B B B B B B	2 4 4 4 4 4 4 4	Int-Rw Int-Rw Int-Rw Ext-Rw Int-Rw Ext-Rw Ext-Rw Int-Rw Int-Rw Int-Rw	. 14 . 16 . 14 ³ / ₈ . 15 ⁵ / ₈ . 14 . 15	21/4 13/4 3 2 2 21/2 21/2 21/2 21/2	1/4	None None Int-Rw Int-Rw Int-Rw	. 13 ⁵ / ₈ . 14 ⁵ / ₈ . 18	2 21/4 13/4 13/4	312 14	No IF IF IF IF	Roller. Roller. Ball Roller. Roller. Roller. Roller. Roller.	Roller. Roller. Ball	Roller. Roller. Roller. Roller. Roller. Roller. Roller.	Roller. Roller. Roller.	Roller.	Ma I 1010 Ma I Steel Steel 1040 1040 1040 1040	9¾-32 9 -30 9¼-32 9¾-33 11½-32 12½-34 12¾-36	60	185 514 Var. 335 285 385 560	Oil Oil Oil Oil Oil	Columbia 360 Columbia 220 Columbia 550 Eaten 411 Eaten 75 Eaten (Terb) 75 Eaten (Terb) 100 Eaten (Terb) 25 Eaten (Terb) 25
	A A Opt Opt A A Opt Opt Opt Opt Opt	B-L. B-L. Frost. Frost. Frost. Frost.		4 2 4 4 4 4 4 4	Int-Rw Int-Rw Ext-Rw Int-Rw Int-Rw Int-Rw Int-Rw Int-Rw Int-Rw	. 19 . 13 ⁵ / ₈ . 15 ¹⁵ / ₁₅ . 15 ¹⁵ / ₁₅ . 16 ⁷ / ₈ . 20 . 24 . 16 ⁷ / ₈	2 2½ 2¼ 3½ °4½ 5 4½	\$2 - 12 - 12 - 12 - 14 - 14 - 14 - 14 - 1	Ext-D S None Int-Rw Int-Rw None None None None	. 10 . No . 15 5 . 15 5 . No . No . No	4½ No 2 2¼ No No No No	No No No No	IF IF IF IF IF	Roller. Ball Ball Ball Ball Ball Ball	Ball None None None Ball Ball Ball	Roller. Roller. Roller. Roller. Ball Ball Ball	Roller. Roller. Roller. Roller. Roller. Roller. Roller. Roller.	Roller. Ball Ball Ball Ball Ball Ball	Ma I Ma I Ma I Ma I Ma I Ma I Ma I Ma I	8 12 30 8 16 83 4 x 32 103 8 36 103 8 34 ° 103 8 34 11 -38 11 -40	56 56 58 57½ Var. 6738	1100 Var	Oil Oil Oil Oil Oil Oil Oil Oil	Eaten (Terb) Eaten . 501-R, 502 Eaten
	Opt Opt Opt Opt Opt Opt	Opt. Opt. Opt. Opt. Frost. Frost. B-L. B-L.	B B B B B	4 4 4 4 4 4	Int-Rw	. 16 ^{7/8} . 16 ^{7/8} . 15 ^{1/8} . 13 ^{5/8} . 16 ^{7/8} . 20 . 15 ^{1/8}	3 3 °4½ 2¼ 2½ 5 5 2¼ 2½	14.14.14.14.14.14.14.14.14.14.14.14.14.1	Int-Rw Int-Rw None Int-Rw None None None Int-Rw None Int-Rw	. 1678 . No . 1518 . No . No . No	21/4 No No No 21/4	No No No No	IF IF IF IF IF IF	Ball Ball Ball Roller. Ball Ball Ball Ball	None None None None Ball	Roller. Roller. Roller. Ball Ball Roller.	Roller. Roller. Roller. Roller. Roller. Roller. Roller. Roller. Roller.	Ball Ball Ball Ball Ball Ball Ball	Ma I Ma I Ma I Ma I Ma I Ma I Ma I Ma I Ma I	107/8-36 12 -40	5778 56 5614 6134 6718 6012	1144 438	Oil Oil Oil Oil Oil Oil	Eaton. 2 Eaton. 2250-2 Eaton. 2250-2 Eaton. 1 Eaton. 5 Eaton. 7 Eaton. 7 Eaton. 1 Eaton. 1 Eaton. 1
	Opt B A B A Opt B A	B-L. Fairfield. B-L-C. Warren. Warren. Warren. B-L-C.	B B B B Hyp	4 4 2 2 2 2 2 2 2	Int-Rw Int-Rw Int-Rw Int-Rw Ext-Rw Int-Rw Ext-Rw Int-Rw Ext-Rw	. 16½ . 17¼ . 14 12 . 14¾ 12 . 12 . 12 . 12	21/2 3 2 13/4 21/2 13/4 13/4 2	16	None None None None None	No No No 14 No	No No No 2½ No No	No No No No No No	IF Opt Opt Opt Opt	Ball Ball Ball Ball Ball Ball	None	Roller. Roller. Roller. Roller. Roller. Ball Roller.	Roller. Roller. Ball Roller. Roller. Roller.	Ball Ball Ball Ball Ball Ball Ball	Ma I Ma I 1015 1015 1015 1015 1015	8%-32 91%-34 91%-32 91%-30 91%-32 10 -32 10 -32	61 56½ 56 56½ 566	658 196 152 290 165	Oil Oil Oil Oil Oil	Eaten. 1 Eaten. 2 Salisbury.
	B A B A Opt Opt Opt Opt	Warren	B B B B	2 4 4 4 4 4 4 4	Ext-Rw Int-Rw Int-Rw Int-Rw Opt Opt Opt Opt	. 14	1½ 1¾ 3		None None Int-Rw None None Int-Rw	. No. 21		.No.	Hyd I F I F I F I F	Roller. Roller. Roller. Roller. Roller. Roller. Roller. Roller.	None None	Roller Roller Roller Roller Roller	Roller. Roller. Roller. Roller. Roller. Roller. Roller. Roller.	Roller. Roller. Roller. Roller. Roller. Roller.	Ma I		56½ 58½ 65¾ 61½ 65½ 65½ 61½	1275	Oil Oil Spec Spec Spec Spec Spec Spec Spec Spec	Salisbury Salisbury. Timken. 6670 Timken. 6870 Timken. 63 Timken. 63703, 63 Timken. 63720, 63
	Opt Opt	Timken Timken Timken Timken Timken Timken Timken Timken Timken	B B B B B	4 4 4 4 4 4	Opt Opt Opt Int-Rw Opt Opt Opt				Opt Opt Opt Opt Opt Opt Opt				IF IF IF IF IF IF IF	Roller. Roller.		Roller Roller Roller Roller Roller Roller	Roller. Roller. Roller. Roller. Roller. Roller. Roller. Roller.	Roller. Roller. Roller. Roller. Roller. Roller. Roller.	Ma I Ma I 1010 1010		65½ 74¼ 60½ 58 62¾ 66 63 69½		Spec Spec Spec Spec Spec Spec Spec Spec Spec Spec	Timken 65 Timken 56 Timken 54 Timken 57 Timken 56 Timken 66 Timken 66 Timken 66 Timken 66
	Opt Opt Opt Opt	TimkenTimkenTimkenTimkenTimkenTownOwnOwnOwn	B B B B B	4 4 4 4 4	Opt Opt Opt Opt Opt Int-Rw Int-Rw	. 17 . 17 . 17	3 3 3		Opt. Int-Rw. Opt. None. None. Int-Rw. Int-Rw. Int-Rw.	. 12½ . 12¼ . 12¼	21/2 21/2 21/2	16 16	IF IF IF IF IF	Roller Roller Roller Roller Roller B-R	None None None.	Roller. Roller. Roller. Roller. Ball Ball	Roller. Roller. Roller. Roller. Roller. Roller. Roller.	Roller. Roller. Roller. Roller. B-R B-R	1010 Ma I., 1010 1010 1010 Ma I., Ma I., Ma I.	11 -36 11 -36 10½-36	57½ 58	625 690	Spec Spec Spec Spec Spec Oil Oil Oil	Timken 66 Timken 55 Timken 66 Timken 6 Timken 6 Timken 820-4 Wisconsin 820-4 Wisconsin 8 Wisconsin 8
	A A Opt Opt Opt	Own. Own. Own. Own. Own. Own. Own. Own.	B B B B	4 4 4 4 4 4	Int-Rw	. 24 . 17 . 17 . 18 . 17 . 17	3 3 ¹ / ₂ 3 4 3 5	15 15 15 14 0 15 14	Int-Rw	. 18½ . 12¼ . 12¼ . 13½ . 12¼ . 12¼	21/2 21/2 31/2 21/2 21/2 21/2 21/2	16 16 16 16 16 16 16 16 16 16 16 16 16 1	IF IF IF IF IF	Ball Ball Ball Ball Ball Ball Ball	None None Roller. Roller. Roller. Ball	Ball B-R Ball B-R B-R Ball	Roller. Roller. Roller. Roller. Roller. Roller. Roller.	Ball Ball Ball Ball	Ma I Ma I Ma I Ma I Ma I Ma I Ma I Ma I	11 -42 11 -36 11 -36 11 -36 11 -36 11 -36	50-64 70 57½ 57½ 57½ 57½ 5758	1000 1400 475 525 525 660 600	Oil Oil Oil Oil Oil	Wisconsin. 90 Wisconsin. 910-DF Wisconsin. 10 Wisconsin. 4 Wisconsin. 4 Wisconsin. 6600-B6 Wisconsin. 66
	Opt Opt	OwnOwnOwnOwn	B	4 4 4	Int-Rw Int-Rw Int-Rw Int-Rw	. 18		1/4	Int-Rw Int-Rw Int-Rw Int-Rw Int-Rw	. 13½ . 13½ . 13½ . 15♣	2½ 2½ 2½ 3	18 18	IF IF IF IF	Ball	Roller. Roller. Ball Ball	B-R	Roller. Roller. Roller. Roller. Roller.	Ball Ball	Ma I Ma I Ma I Ma I Ma I		68 68	750 720 1100	Oil Oil	Wisconsin. 8800A-880 Wisconsin. 68010, 68 Wisconsin. 68410, 68 Wisconsin
	A A Opt Opt Opt	Own Own Own Own Own Own Own Own Own	B B B B B B	4 4 4 4 4 4 4	Int-Rw Int-Rw Int-Rw Int-Rw Int-Rw Int-Rw Int-Rw Int-Rw Int-Rw	20 20 23 18 16 16 16 16 ¹ / ₄	3 4½ 4 2¼ 3½ 4	14141414	Int-Rw. Int-Rw. Int-Rw. Int-Rw. -Ps. -Ps. -Ps. Int-Rw.	. 15 to 15 to 18 1/2 13 1/2	2½ 3 3½ 3 3 	10 10 10	IF	Ball	Roller. Roller. Ball None	Ball Ball Roller.	Roller Roller Roller Roller Roller Roller Roller Roller	Ball Ball Ball Roller.	Ma I.		60-64 71 71 68 60 65 69	1000 1450 1450 1200 425 550 850	Oil Oil Oil Oil Oil	Wisconsin

Int Rw—Internal Rear Wheels Int D S—Internal Driveshaft Ma I—Malleable Iron Mol—Molybdenum

NcA—Nickel Alloy New P—New Process No. F—Non-Fluid N-P—No Provision

OF—Outside of Frame
Opt.—Optional
Ps—Propeller Shaft
S-A—Springs and Torque Arm

S B—Spiral Bevel Sp—Springs Spec—Special T—Trucks

*—Optional ‡—When used with four wheel brakes °—Others Also †—1928 Specifications

American Stock Gearsets

				February 23,
MAKE AND MODEL	Brown-Lipe 208	Campbell G25 Campbell D-21 Cotta Gear 65-S Cotta Gear 12 Cotta Gear 55-S	Cotta Trans. A-AAU Cotta Trans. R&RU Cotta Trans. T Cotta Trans. T Cotta Trans. T Covert. WAC Covert. RAJ3 Covert. RAJ3 Covert. RAJ3 Covert. RAJ4 Covert. RAJ5 Covert. RAJ5 Covert. RAJ5 Covert. RAJ5 Covert. RAJ7 Co	Detroit RR Detroit R B Detroit RL Detroit R.S Detroit R.S Detroit P.W Durston 04700 Fuller TDU, SU Fuller G, GU Fuller H, HU Fuller HOG&2-SC-2-9 Fuller HOG&2-SC-15 Fuller C-SC-2-17 Fuller
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Standard S.A.E. Gearshift	Yes	Yes No.	Yes 2 2 2 2 2 2 2 3 3 3 3 3 3 3 3 3 3 3 3	YYES YYES YYES YYES YYES YYES YYES YYES
Sold With Clutch?	00000 8 8 8 8 1 1 1 1 1 1 1 1 1 1 1 1 1	No.	Opt. VY Yes. NO. No.	NNO.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.
Control Location	00000444000000	CCCCC	SE ST. SE	222222222222222222222222222222222222222
Gearset Location	11:::::::::::::::::::::::::::::::::::::	11111	P.A. P.A. P.A. P.B. C. P.B. C. P.B. C. S. C. C. S. C. C. S. C. C. S. C. C. C. S. C.	10.00 10
Reverse	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	5.47 E-A. 3.85 E-A. 6.30 A. 6.30 SeU. 6.30 E-A.	4.66 4.66 4.66 4.66 None 7.31 7.30 7.30 6.76 6.80	3.7.08 7.08 7.08 7.08 3.7.7 3.50 6.1.6 6.1. 8.2.7 7.8 8.2.7 7.8
Fourth Fourth	06 00 00 00 00 00 00 00 00 00 00 00 00 0	1.00 None 1.60 None 1.60	1.00 1.00 1.00 1.00 1.00 None None 1.00 1.00 1.00	None 1.000 1.000 None None None 1.00 1.00 1.00 1.00 1.00 1.00 1.00
	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 2.80 1.00 2.80	1.86 None. 1.90 1.92 1.90 1.60 1.60 1.60	N N N N N N N N N N N N N N N N N N N
Second	2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.	2.93 1.71 4.75 1.81 4.75	2.00 2.00 2.00 2.00 2.00 2.00 2.00 2.00	23.23.23.23.24.47.47.69.21.69.21.69.21.00.22.07.00.23.00.20.00.23.00.20.00.20.00.20.00.20.00.20.00.20.00.20.
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Direct Drive On	. no set	4-6000	44440004004444	0
Gear Teeth Pitch	140000000000000000000000000000000000000	6-P 6-P 5-7	6-8 8 8 9 9 1-7-10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	6 6 6 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
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Shaft Material (3.A.2)	232 CChS. CChS. CC	6150 2350 2340 2340 2340	3120 3120 3120 3120 3120 3120 3120 2320 23	Spec
IsirətsM gnizuoH	Cast I. Cast I. Ci & Al Ci & A	Opt. Cast I S St	Coast I. Coast II. Coast III. Coast	Cast 1. Cast 1
Severse	70/0/2/4/4/4/2/2/4/2/2/4/2/2/4/2/2/4/2/2/4/2/2/4/2/2/4/2/2/4/2	- % - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5	% 747.00 servada 14.12.12.12.12.12.12.12.12.12.12.12.12.12.	7.7. 7.7. 7.7. 7.7. 1.0. 8. 1.0. 1.0. 1.0. 1.0. 1.0. 1.0.
FACES	ZZZ :::: ° ZZQ	Dir None. 174 None.	114 114 114 114 114 114 114 114 114 114	NN
GEAR buidl		54247474	4 111 00 to 11 11 11 11 11 11 11 11 11 11 11 11 11	** ***********************************
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Type of Direct Drive		Spec Jaw Jaw	Jaw Jaw Jaw Jaw Jaw Jaw Jaw GeT. GeT. GeT. GeT. GeT.	66611 66611
umber of Forward	0000044400044004p-4	400000	* * *	0 4 4 0 4 0 0 0 0 0 0 0 4 4 4 4 F 0 0 0 4 4
Center Lines of Main and Second- try Shafts (Ins.)	4044	3.83 5.4 5.55 4.91	4446666 604666 604666 605666 605666 605666 60566	64 4 7 6 6 6 6 6 6 6 6 7 4 4 7 7 4 7 6 6 6 6
nside Distance Be- ween Bearings on Main Shaft (Ins.) Jistance Between	4.50 12.5 8.5 6.5 8.5 6.5 8.5	13 12.00 12.43 12.43	12.50 18.50 18.50 18.50 16.50 16.50 6.50 8.37 111.37 111.37	6 6 19 10 10 10 10 10 10 10 10 10 10 10 10 10
value ondary	2 2 2 2 2 2 2 2 2 2	Roller Plain. Ball. Ball. Ball.	Ball Ball Ball Ball Ball Ball Ball Ball	Roller. Ball Ball Roller. Roller. Plain Roller. Roller. Ball
BEARINGS	THERETHERE	Roller. Ball Plain Ball	Ball Ball Ball Ball Opt Roller. Roller. Roller. Roller. Roller.	Roller- Roller- Roller- Roller- Roller- Roller- Ball-
Had2 aisN	BARKKKKKKKKKKKK	Roller. Ball Ball Ball	Ball Ball Ball Ball Ball Ball Ball Ball	Ball.
Abe	Clash Clash	IndC	Find Control C	Clash Clash
Aszimum Engine orque (Lbs. Ft.)	333333333333333333	Var Var 230	2200 2200 2200 3375 375 500 150 184 184 184 184 250 280	165 200 300 320 215 250 215 250 74 74 74 74 74 74 74 74 74 74 74 74 74
10} bəngisə(FFF PF	7. T. B. B. T. T. T. T. T. B. T. T. T. T. B. T.	HEHEHOHEHEHE	7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7
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Date No 286 Oil. Jones To	Spec—Special. Sgr—Sem Steel. T—Trucks. Tr—Tractors. Var—Variable.
Section Sect	NoF—Non Fluid Oil. Opt—Optional. P—Pitch RG—Rail Cars. R-P—Roller or Plain. SeU—Separate Unit.
Cast L. 2320 2320 5-7 4	Dir-Direct. E-A-Engine or Amidships. Eng.—Unit with Engine. Geff.—Gear Teeth. IndC-Individual Clutch.
4 4 6 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	Cast I—Cast Iron. Ce—Center. Cha—Chrome Steel. CI & AI—Cast Iron and Alum Con—Constant Mesh C-S—Center or Side.
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Jones Johns John	VIATIONS: dilary Transmission. isla Design. i Steel. onal.

American Stock Steering Gears Specifications of typical models made by independent parts manufacturers.

ABBREVIATIONS: Online Also	\$-1928 Specifications	Al—Alumnum AW—Abow Wheel B—Buses BakP—Ball and Plain B-Pronze Burl—Butting BW—Below Wheel G—Carl—Author	ChN—Carbon Nickel ChN—Chrome Nickel CAL—Can and Lever CI—Cast Iron Ma—Malleable Ma—Malleable Ma—Maganese Sicel Nic—Nickel Obtional Optional Optiona
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OUTSIDE	_	Wheel Shaft (Ins.)	TANKA ANAMA MANAMATANA ANAMATANA ANAMATANA
		Steering Wheel (Ins.)	1888 25 25 25 25 25 25 25 25 25 25 25 25 25
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CAPACITY		For Vehicle Gross Weight (Lbs.)	3000 3000
		Designed For	7.7.7.7.7.7.8.8.8.8.8.8.8.7.7.7.8.8.8.8
		MAKE AND MODEL	Columbus 13 Cars Columbus 14 Cars Columbus 15 Cars Columbus 15 Cars Columbus 15 Cars Columbus 17 Tab Tab Cars

American Stock Front Axles

		Tornary so, 1000	
	MAKE AND MODEL	Adams 7590 Adams 7590 Clark F206 & F306 Clark F30 & F306 Clark F30 & F306 Clark F30 & F306 Columbia 5500 Continental 1700 Continental 1803 Continental 2303 Continental 2303 Continental 2304 Continental 2304 Continental 2304 Continental 2304 Eaton Torb) AA 38 Eaton Torb) AA 48 Eaton Torb) AA 58 Eaton 70 P Shaler 5428 29, 351 Shaler 5428 29, 331 Shaler 5428 29, 331 Shaler 5428 29, 331 Shaler 5508 118, 728 Shaler 5508 118, 710 Shaler 5531, 32, 318, 328 Shaler 5508 118, 728 Timken 11703, 12703 Timken 11703, 12703 Timken 11704, 5309 Timken 15300 Timken 15300 Timken 16300 Wisconsin Columbia 8500	Y&P-Yoke and Pin
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MAT	Steering Knuckle (S.A.E. No.)	2 133 2 133	_
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	MAKE AND MODEL	Adams 75901 Cars Clark F206 & F210 Cars Clark F306 & F304 Trucks Clark F306 Trucks Columbia 5500 Trucks Columbia 5300 Cars Columbia 5300 Cars Columbia 5300 Trucks Columbia 5300 Trucks Continental 1901 Trucks Eaton 500 Trucks Eaton 500 Trucks Eaton 700 Trucks Salisbury 0, P Cars Salisbury 100 Trucks Shuler 5503 32,313,2 Trucks Shuler 5503 70 Trucks Shuler 5503 70 Trucks Shuler 5503 70 Trucks Trucken 11703 1Trucks Trucken 1500 Trucks Trucken 15	-Also Others



American Stock Clutches



		Capacity,			Each 8.)	OF FA		bers	bers	rial		PR	ESSUR	ES (Lb	s.)	iam-			IVE EN BY	=	vided	3	
MAKE AND MODEL	Designed For	Rated Torque Cap: (Lbs. ft.)	Туре	Facing Material	Mean Radius of Ea Friction Face (Ins.)	Maximum (Ins.)	Minimum (Ins.)	No. of Driving Members	No. of Driven Members	Disk or Plate Material	No. of Springs	Total Spring Pressure	Total Pressure on Friction Face	Pressure per Sq. Ins. of Friction Surface	Pressure Required at Thrust Bearing to Disengage	Overall Outside Dia eter of Clutch (Ins.)	Type of Throwout Bearing	From Flywheel to Driving Members of Clutch	Fr'm Driv'g Memb's of Clutch to Driving Shaft of Clutch	Means of Adjustment	Is Clutch Brake Provided	Bell Housing (S.A.E.) (Nos.)	Weight (Lbs.)
Borg & Beck	C & B	180 300 90 125 155 155 180	SP SP SP SP SP SP SP SP SP	Wo Wo Wo Wo Wo Wo Mo Mo	4.78 4.78 4.40 5.40 3.25 3.75 4.15 4.15 4.40	11.87 11.87 10.87 13.87 7.87 8.87 9.87 9.87 10.87 8.87 8.87	7.25 7.25 6.75 7.75 5.12 6.75 6.75 6.75 6.75 6.12	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Steel. Cast I Steel.	. 1 . 1 . 1 . 1 . 1 9	275 300 1100 1100	2200 2200 1500 2200 900 1100 1300 1300 1500 1100	31.6 31.6 27.0 21.0 32 34 33 33 27 34 34	300 300 300 300 275 300 300 330 275 275	133/8 133/8 111/4 151/2 81/4 101/4 101/4 111/4 101/8	Ball T Plain Ann B Opt Opt Opt Opt Opt Opt	Pins. Keys. Pins. Pins. Pins. Pins. Pins. Pins. Pins.	Splines Splines Splines Splines Splines Splines Splines	SCP SCP SCP SCP SCP SCP SCP None.	Yes No No No No No		37 52 225 541 125 135 173 19 221 133 163
Borg & Beck. 9RD Borg & Beck. 10QWD, 10- QLWD. Borg & Beck. 10R Borg & Beck. 10R Borg & Beck. 18-X Brown-Lipe. 61- Brown-Lipe. 70 Brown-Lipe. 30 Brown-Lipe. 35 Brown-Lipe. 55 Brown-Lipe. 55 Brown-Lipe. 55 Brown-Lipe. 55 Brown-Lipe. 10 Brown-Lipe.	Cars B, Tr. T & B, Tr. T & B, Tr. T & B Tr. C & T. T & B Tr. C & T. T, B Tr. C, T & B Tr. C, T & B Tr. C, T & B Tr. T, T & Tr. C, T & B Tr. T, T & Tr. T, T Tr. T & Tr	334 478 150 120 225 175 275 225 375 175	MD MD SP SP M D SP M D SP M D SP	Wo.	3 65 3 65 3 65 3 65 3 65 3 65 3 65 3 65	9.87 17.75 9.25 8.45 8.43 8.43 9.25 8.43 9.25 8.43 9.27 113.75 9.00 8.25 8.25 8.25 8.26 8.26 8.26 8.27 8.27 8.27 8.27 8.27 8.27 8.27 8.27	6.37 6.37 4.62 4.62 6.25 5.75 5.75 5.50 6.50 6.50 6.50 7.18 6.75 Var 6.00 6.87	2 2 2 13 4 3 5 6 7 10 8 1 1 1 1 8 4 4 5 9 3 3 4 9 5 6 7 8 8 6 2 3 3 4 1 1 1 1 2 3 1 1 1 2 3 2 2 2 3 2 2 2 2 2	11 1	Steel. Steel Steel Steel Steel CI&S Steel CI&S Steel CI&S Steel Steel Cast Cast Cast Cast Cast Cast Cast Cast	1 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	600 Opt I80; 200 420 700 700 700 700 375 342 300 550 550 350 550 350 350 250 350 350 350 350 350 350 350 350 350 3	1300 4680 Opt. Opt. Opt. Opt. Opt. Opt. Opt. 1260 1400 Opt. 1260 1400 Opt. 300 3600 550 550 550 550 550 127 1875 Var. Var. Var. Var. Var. Var. Var. Var.	20.5 Var Var Var Var Var 17.0 12.05 20.5 Var 17.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0 12	Var Var Var Var Var Var 185 150 150 204 215 204 Var 418	101/4 11-3/4 11-3/4 11-3/4 93/4 94/4 94/4 94/4 94/4 11-3/4	Ball T. Ann B. I T. Ball T.	Gear I Studs Studs Studs Gear I Gear	Splines Splines Splines Keys. Keys. Keys. Keys. Keys. Keys. Keys. Keys. Splines	None	NO. Yes. No. No	1, 2, 3, 3, 4, 2, 3, 4, 2, 3, 4, 2, 3, 4, 5, 3, 4, 5, 5, 1, 2, 3, 4, 5, 2, 3, 4, 5, 2, 2, 3, 4, 5, 2, 2, 3, 4, 5, 2, 2, 3, 4, 5, 2, 2, 3,	83 87 89 93 75 90 00 62 117 124 127 124 125 28 60 60 22 27 114 124 124 125 28 31 124 124 124 125 126 127 127 128 128 128 128 128 128 128 128 128 128

ABBREVIATIONS:
†—1928 Specifications.
°—Slightly higher for QL.
°—Varies According to Load.
AISt—Alloy Steel.
Ann B—Annular Ball.
Ball T—Ball Thrust.

R—Buses.
C—Cars.
Cast I—Cast Iron.
Cl&S—Cast Iron and Steel.
Gear T—Gear Teeth.
Lea—Leather.
MD—Multiple Dry Disc.

MO—Multiple Disc in Oil,
Mo—Molded Composition.
Opt—Optional.
SCL—Screws in Clutch Levers.
SCP—Screws on Cover Plate.
Self A—Self Adjusting.
Step R—Stepped Ring.

SP—Single Plate.
Sp B—Spring Bolts.
T—Trucks.
Tr—Tractors.
Th R—Threaded Ring.
Var—Varies.
Wo—Woven Fabric.

Airplanes of the World

WEIGHTS	(Net Pay Load (Lbs.		330 340 340 340 340 340 Var Var Var 500	2000 2229 2229 1445 1445 1211 750 4650 4650 340	200 5380 5380 540 540 540 540 540 540 540 540 540 54	330	674 800 1477 1129 200 650 1328
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Airplanes of the World-Continued

							February 23, 1929
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Airplanes of the World-Continued

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Heinkel. Junkers. Mohrbach. Rohrbach.	Folice Folice Folice Folice Folice Folice Folice Folice	S.A.B.A	Avia.	Copression	A. B. F. B. F. B. F. B. F. B. F. F. B. F. F. B. F. F. B. F. F. F. B. F.	



Airplane Engines



							R.P.M.									IGN	ITIO	7	STAF	RTER				LATION ONS (In	
ENGINE MAKE AND MODEL	Туре	Cooled by	No. of Cyls. Bore and Stroke (Ins.)	Piston Displacement	Compression Ratio	B. M. E. P.	Rated B.H.P. and R.	Maximum B.H.P. at R.P.M.	Crankshaft Normal R.P.M.	Propeller Normal R.P.M.	Fuel Consumption Lbs. B.H.P. Hr.	Oil Consumption Lbs. B.H.P Hr.	Fuel Consumption Gals. Hr. (Approx.)	Weight, Dry (Lbs.)	Carbureters Number	Make	Type	Number	Make	Туре	Length	Height †	Width +	Height Above Engine Bearers Above Engine Bed	Center to Center of
Acromarine Rad keromarine AD-9 keronautical Prod. S. Allison. V-1410 Illison. V-1410 Illison. V-1630 Illison. F. Illison. V-1630 Illison. F. Illison. G. I	Radial Vert In V 45 In V 45 Radial	Air	9-37 sx 43 4 9-23 4x 33 8 4-45 sx 5 12 -45 sx 7 12-5x 7 7-41 2x 51 2 3 -41 sx 43 3 -41 sx 41 2 -51 sx 61 2 -51 sx 61 2 -51 sx 61 2 -51 sx 61 4 12 -51 sx 61 2 -51 sx 61 4 12 -51 sx 61 2 -51 sx 61 4 12 -51 sx 61 6 12 -	5000 1822 3326 1410 1656 153 153 1542 1559 1569 1569 1569 1569 1569 1569 1569	55.56.56.33.44.38.82.22.50.35.55.55.55.55.55.55.55.55.55.55.55.55.	1111 1100 128 128 128 128 129 130 125 125 110 110 110 110 140 140 140 140 140 140	125-1800 40-2000 100-1800 430-1900 430-1900 430-1700 150-1800 70-1800 80-1600 40-1600 100-1800 00-2450 170-1800 130-1800 20-1750 100-1725 60-1900 90-2000 90-2000 90-2000 800-2500 600-2500 800-2500 800-2500 800-2500 800-2000 450-1725 80-1800 800-2500	150-2166 51-2000 135-2300 450-2000 450-1800 125-2400 125-2400 125-2250 123-2050 67-1900 99-2000 287-1750 132-1850 132-1850 132-1850 132-1850 132-1850 132-1850 132-1850 132-1850 133-1650 132-1850 132-1850 133-1650 132-1850	A N 1,1800,1900,1900,1900,1900,1900,1900,190	VI E 1800 1800 1800 1800 1800 1800 1800 180	RII 551 552 555 555 555 555 555 555 555 555	C A 04 03 03 03 03 02 016 02 02 02 03 03 03 03 03 03 03	N 10 3 8 9 339 336 8 4 4 5 5 8 8 38 38 36 36 36 36 36 36 45 5 17 2 2 17 7 2 17 7 2 1	365 2 3 350	5 1.Strom 25 1.Zenith 31 1.Strom 25 2.Strom 25 2.Strom 25 2.Strom 26 1.Strom 26 2.Strom 27 1.Zenith 28 1.Vinfd 30 1.Zenith 31 1.Zenith 32 1.Strom 33 1.Strom 34 1.Strom 35 1.Strom 36 2.Strom 36 2.Strom 37 1.Strom 38 1.Strom 39 1.Strom 39 1.Strom 30 1.Strom 30 1.Strom 31 2.Strom 32 2.Strom 33 2.Strom 34 2.Strom 35 2.Strom 36 2.Strom 37 2.Strom 38 1.Zenith 38 1.Strom 38 1.Strom 39 1.Strom 39 1.Strom 30 1.Strom 30 1.Strom 30 1.Strom 31 2.Strom 31 2.Strom 32 2.Strom 33 2.Strom 34 1.Strom 36 1.Strom 36 1.Strom 36 1.Strom 37 2.Strom 38 1.Zenith 38 1.Zenith 38 1.Zenith 38 1.Zenith 39 1.Strom 30 1.Strom 31 1.Strom	Sein Salm. Bos. D-R. D-R. D-R. Sein.	M. M	212222222222222222222222222222222222222	Own A-M Eel	HC In EM. HC In EM. HC EM. HC EM. HC HC EM. HC In In In In In In In In In In In EM. EM.	30 11 39 18 18 18 18 18 18 18 18 18 18	38 38 24 ³ / ₄ 46 ³ / ₄ 43 ⁷ / ₁ 46 ³ / ₄ 43 ⁷ / ₁ 35.9 35.9 35.9 35.9 36.3 32 ³ / ₄ 42 ³ / ₂ 32 ³ / ₄ 42 ³ / ₂ 36.3 38 ³ / ₄ 42 ³ / ₂ 42 ³ / ₂ 40 ³ / ₂ 40 ³ / ₂ 40 ³ / ₂ 37 ³ / ₂ 37 ³ / ₂ 37 ³ / ₂ 37 ³ / ₂	1914 341 2614 9.85 8.66 8.66 261 267 267 267 267 291 443 505 505 505 543 443 371 443 371 443 371 443 443 443 443 443 443 443 443 443 44	25% 14% 14% 14% 14% 14% 14% 14% 18% 18% 18% 18% 18% 18% 18% 18% 18% 18	19.11) 26 17 17 17 17 18 Adia Radia
BC Scorpion MK II BC Hornet DC Cirrus MK III Armstrong S Genet E Armstr S, Mongoose 2 Armstrong S, Lynx IV Armstrong S, Lynx IV Armstrong S, Jaguar IV Armstrong S, Jaguar IV Armstrong S, Jaguar IV Armst G, Jaguar IV ristol Jupiter VIA ristol Jupiter VIII ristol Jupiter VIII ristol Jupiter IX ristol Titan IIII apier Lion VIII apier L	Horiz Vert Radial Radia	Air Wat Wat Wat Wat Wat Wat Wat Wat Wat	4-4.01x4.8 4-4.33x5.12 5-4x4 5-5x5½ 7-5x5½	243 302 251 540	5.0 5.0 6.3 5.3 5.3 5.3 5.3 6.25 6.5 5.22 6.0	132 119 116 120 118 123 123 123 123 123 121 122 121 122 130 127 133 133	34-2300 75-1875 85-1900 65-1850 135-1700 138-1700 385-1700 415-1700 440-1700 440-1700 440-1700 445-2000 225-1700 225-1700 360-1800 360-1800 490-2250 490-2250	75-2035 153-1870 200-1780 440-1870 520-1870 445-1870 475-1950 550-2200 245-1870 502-2200 567-2585 570-2585	2300 2 1875 1 1900 1 1850 1	1875 1900 1850 1700 1620 1700 1700 1700 1700 1775 1000 1700 1318 2350 1247 907 1080 1422 1242	.50 .51 .54 .46 .46 .46 .46 .46 .5 .52 .51 .51 .53 .53 .47 .47	40 35 127 20 20 20 20 20 3 3 3 3 3 3 3 3 3 3 3 3 3	2 6 6 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	220 3.0 280 3.3 260 2.0 495 2.7 780 2.0 810 2.1 720 1.3 720 1.4 880 1.6 505 2.0 950 2.1 990 1.8 362 2.0 959 2.6 865 1.7 865 1.7	9 1-Zenith 1-Zenith 1-ClauClauClau 5 -Zenith -OwnClau 8 1-Own 6 1-Own 6 1-Own 2-Own 6 1-Own 2-Own 6 2-Own	BTH	M M M M M M M	122222222222222222222222222222222222222	Own Own Own Own Own Own Own Own Own	PS HM° Gas°. Gas°. CA CA HC°. HC°. HC HM HM Gas	201/2 251/2 251/2 251/2 20.5 20.5 20.5 28.6 21.7 57 61 61 81 73.0 63.5 63.5	30 36.1 3314 451/2 451/2 451/2 451/2 55 55 541/2 55 55 50	42 42 42 31.2 32.0 24.4 24.4	Radial Radial Radial Radial Radial Radial Radial Radial Radial	Radia Radia Radia Radia Radia Radia Radia
nzani 3A nzani 6A nzani 10A nzani 10A arman 12WE arman 18WI arman 9EA inome & Rhone9AkX inome & Rhone 9Aex inome & Sab iispano S 84b iispano S 12TG iispano S 12TG iispano S 12TG iispano S 12Gb	Radial Radial Vee 60 W 50 Radial Radial Radial Radial Radial Radial Vee 90 Vee 90 Vee 90 Vee 90 Vee 60 Vee 60 Vee 60	Air Wat Wat Air Air Air Air Air Air Wat Wat Wat Wat Wat Wat Wat Wat	6-4.14x4.92 10-4.14x5.71 12-5.12x6.3 18-4.34x4.93 9-4.54x4.74 9-5.66x7.36 5-5.66x6.4	457.3 768.0 1556 1027 690.6	5.2 5.2 5.3 6.5 5.3 6.5 5.3 6.5 7.3 6.5 6.5 7.3 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5 6.5		35-1500 80-1600 120-1600 550-2250 600-2800 250-2600 480-2000 480-2000 480-2000 480-2000 180-1800 300-1800 330-1870 350-1800 400-2000 450-1800 500-2000	580-2300 700-3200 280-2700 235-2100 345-2100 370-2100 390-2100 465-2100 535-2100	1500 1 1500 1 1500 1 2250 1 2800 1 2000 1 1700 1 2000 2 2000 2 1950 1 1800 1 1870 1 1870 1 1870 1 1870 1 1800 1	1500 1500 1125 1080 1300 1700 2000 1335 1800 1800 1800 1800 1800	.50 .50 .50 .503 .484 .484 .484 .503 .507 .507 .495 .501	017 022 024 044 11 1 039 3 039 3 026 026 026 026 020 020 020	0.9 7.8 9.6 9.6 9.5	150 216 308 232 22 2012 1 6 484 1 7 857 1 .8 506 2 .1 770 1 .7 770 1 .7 778 429 594 605 781 781 858 858	1-Zenith. 1-Zenith. 3-Zenith. 9-Zenith. 1 2-Zenith. 1 2-Zenith Trip Trip Trip Trip. 2-Solex. 1-Solex. 1-Solex. 6-Own 6-Own 6-Own	Bos. Own Salm. Own Own SEV SEV SEV SEV SEV SEV Scin° Scin° SEV° SEV° SAlm°.	M.M.B.B.M.M.M.M.M.M.M.M.M.M.M.M.M.M.M.M	2 2 2 2	Own		51.2 42.8 41.6 41.6	51.8 56.9 55.7	55.7 51.8 56.9 55.7	Radial Radial Radial Radial Radial Radial Radial Radial 19 .77 21 .27 21 .27 20 .66 20 .66 26 .24 26 .44	Radis Radis Radis Radis Radis Radis Radis



Airplane Engines—Continued



			-				R.P.M.										IGNI	TION		STAF	RTER				LATION ONS (In	
ENGINE MAKE AND MODEL	Туре	Cooled by	No. of Cyls. Bore and Stroke (Ins.)	Piston Displacement	Compression Ratio	B. M. E. P.	Rated B.H.P. and R	Maximun B.H.P. at K.P.M.	Crankshaft Normal R.P.M.	Propeller Normal R.P.M.	Fuel Consumption Lbs. B.H.P. Hr.	3.H.	Fuel Consumption Gals. Hr. (Approx.)	Weight, Dry (Lbs.)	Weight H.P. (Lbs.)	Carburetors Number and Make	Make	Type	Number	Make	Туре	Length	Height †	Width †	Height Above Engine Bearers Above Engine Bed	Center to Center of Engine Bearers
lispano S. 12Ha lispano S. 12Hb lispano S. 12Hb lispano S. 12Hb lispano S. 12Lb lispano S. 6Mb lispano S. 6Mb lispano S. 12Mb lispano S. 12Nb	Vee 60. Vee 60. Vee 60. Vee 60. Vee 60. Vert. Vert. Vert. Vee 60. Vee 60. Vee 60. Vee 60. W 60. W 60. W 60. W 60. W 60. Vee 60.	Wat	6-5.12x6.70 6-5.12x6.70 12-5.12x6.70 12-5.12x6.70 12-5.12x6.70 12-5.12x6.70 12-5.91x6.70 12-5.91x6.70 12-4.72x.6.90 12-4.72x.70.90 12-4.72x.7.09 12-4.72x.7.09 13-4.72x.7.09 14-5.3x5.9 14-5.3x5.9 14-5.3x5.9 12-5.51x6.70 12-4.92x6.70 12-5.27x.7.09 12-5.27x.7.09	1917 486.9 1188 2375 2205 2205 966 1407 1490 1490 2234 2234 2234 524 927.2 1860 1528 1955 1955 2652	6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	129.2 129.8 129.2 127.8	450-1800 500-2000 500-2000 600-2000 600-2000 600-2000 600-2000 500-2000 500-2000 550-2000 650-2000 650-2000 650-2000 650-2000 650-2000 650-1850 650-1850 650-2000 500-1850 650-1850 650-1850 650-2000 650-1850	615-2100 550-2100 635-2100 635-2100 635-2100 640-2100 150-2100 300-2100 570-2100	2000 2000 2000 2000 2000 2000 2000 200	2000 1000 2000 2000 1000 2000 1000 2000 1000 2000 1650 1700 1850 1230 1295 1350 1800 1800 1800	501 484 495 484 484 484 485 484 495 506 506 506 506 506 506 506 506 506 484 55 528 484 484 484 484 484 484 484 484 484 4	.020 .020 .020 .020 .020 .020 .020 .007 .007		905 859.5 941 852 1222 1366 330 605 958 1012 814 902 1045 1155 1342	3 .56 2 .31 1 .91 2 .09 1 .78 1 .91 2 .10 3 .3 2 .57 2 .06 1 .73 1 .76 1 .85	6-Own 6-Own 6-Own 6-Own 6-Own 6-Own 3-Own 3-Own 3-Own 6-Own 6-Own 6-Own 4-Own 6-Own 4-Zenith 2-Zenith 4-Zenith 4-Zenith 1-Zenith 1-Zenith 1-Zenith 1-Zenith 2-Zenith 2-Zenith 2-Zenith 4-Zenith 1-Zenith	Ducel.	M M M M M M M M M M M M M M M M M M M	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Viet Viet Viet Viet Viet Viet Viet Viet	HM. HM. HM. HM. HM. HM. HM. HM. HM.	78.2 74.4 70.6 76.3 53.6 65.7 70.2 71.3 77.2 49.0 69.0 60.0 65.6 60.0 65.6 60.0 60.0 60.0 72.3 73.4 73.4 73.4 73.4 73.4 73.4 73.4 73	35.4 40.0 40.5 40.5 40.2 41.7 39.8 40.7 74.5 44.5 44.5 44.5 42.0 42.0 44.8	28 8 8 46 46 72 29 7 21 1 1 21 1 1 228 2 28 2 2 31 .5 31 .5 31 .5 47 .6 47 .6 47 .6 48 .2 28 .2 28 .2 28 .3 33 .2 23 35 .4 35 4 35 4 47 .6 48 .2 28 .2	21 82 21 82 27 02 22 69 22 69 22 57 25 09 22 06 22 06 22 93 22 93 22 93 22 93	Radial Radial Radial 15.4 15.9 17.1
Renault12Md	Vec 60.	Wat	12-6.3x7.09	2652	5.3	124.9	750-1900	810-1900			1.495 R M			14521	1.79	4-Zenith.	SEV.,	М	2			79.4	45.3	38.6	26.7	17.1
Siemens & H Sh 11 Siemens & H Sh 12 Siemens & H Sh 13 Siemens & H Sh 14 Siemens & H. Jupiter Siemens & H. Jupiter	Radial Radial Radial Radial	Air Air Air	7-3.94x4.72 9-3.94x4.74 5-4.14x4.74 7-4.14x4.74 9-5.75x7.5 9-5.75x7.5	517 317			108-1500 68-1500	96-1750 125-1750 82-1750 115-1750 490-1870 510-2100	1575 1575 1575 1575 1575 1730	1575 1575 1575 1575 1575 1730	.528 .528 .528 .528 .528 .528	.026 .026 .026 .026 .044		381 246 308 812	3.03 3.01 2.68 1.65	2-Own 2-Own 1-Own 2-Own 1-Zenith. 1-Zenith.	Own Own Bos	M M M M	2 2 2	Bos Bos Bos Bos Bos	EM. EM. EM. CA. CA.	32.1 32.1 33.8 32.1 30.2 51.8	40.5 40.5 39.3 39.3 55.7 55.7		Radial Radial Radial Radial Radial	Radial Radial Radial Radial
									I	TA	LI	AN	V													
Fiat. A20 AQ Fiat. A20 AQ Fiat. A22 R Fiat. A22 R Fiat. A22 R Fiat. A22 R Fiat. A25 Fiat. A25 Fiat. A50 Sotta Fraschini .500 Sotta Fraschini .750 Sotta Fraschini .80T Sotta Fraschini .80T	Vee 60. Vee 60. Vee 60. Vee 60. Radial. Vee 60. Vert. W. Vert. Vee 60. Vert.	Wat Wat Wat Wat Wat Air Wat Wat Wat Wat Wat	$\begin{array}{c} 12.4.58x5.91\\ 12.4.58x5.91\\ 12.4.58x5.63\\ 12.5.31x6.3\\ 12.5.31x6.3\\ 12.5.31x6.3\\ 12.6.7x7.88\\ 12.6.7x7.88\\ 12.5.71x6.9\\ 7-3.94x4.74\\ 12.5.52x6.70\\ 18.5.52x6.70\\ 18.5.52x6.70\\ 18.5.52x5.52\\ 6-6.78x5.12\\ 12.5.52x5.92\\ 12.4.92x5.51\\ 12.4.92x5.51\\ 12.4.92x5.51\\ 12.4.92x5.51\\ 12.4.92x5.51\\ 12.4.92x5.51\\ 12.4.92x5.51\\ 12.4.92x5.51\\ 12.5.58x5.92\\ 12.5.58x5.92\\ 12.5.58x5.92\\ 12.5.52x5.92\\ 12.$	1159 1703 1703 1703 3374 2145 401.9 1690 901.5 2886 3942 538 1690 403	8.0 5.5 7.5 5.25 7.0 5.6 5.65 5.65 5.7 5.5	154.9 139. 135 160.5 133.5 151.3 109.3 128 131 132 128 126.1 126.1	$\begin{array}{c} 410-2060 \\ 410-2060 \\ 410-2060 \\ 570-1900 \\ 580-2100 \\ 570-1900 \\ 950-1700 \\ 050-1700 \\ 500-1850 \\ 240-1600 \\ 750-1700 \\ 1000-1600 \\ 100-1400 \\ 560-2050 \\ 80-1400 \\ 430-2250 \end{array}$	540-2400 620-2100 740-2200 1000-1400 1000-2500 90-1600 543-2000 290-2000 885-1800 1100-1750 120-1600	2060 1900 2100 1900 1700 2500 1500 1850 1600 1700 1400 2050 1400	2060 1900 1100 1900 1700 2500 1500 1850 1600 1700 1400 1350 1400	052 052 051 051 051 052 052 051 484 484 484 484 484 484 506	.033 .033 .033 .033 .044 .033 .044 .026 .026 .026 .033 .026 .026	31 36 36 36 61 76 6.3 40 19 60 80 6.4 40 7	616 1408 1730 242 1067	. 869 1.72 2.12 1.59 1.61 2.02		Mar Mar Mar Mar Own Own Mar Mar Mar Mar Mar Mar Mar	M M M M M M M M M M M	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		CA.	57.2 57.2 62.9 68.8 62.9 92.2 63.0 30.6 79.5 71.7 80.5 86.5 56.5 83.5	37.2 40.0 42.0 43.5 33.0 37.2	25.6 28.4 28.4 36.0 28.4 35.4 32.0 21.9 39.6 41.6 80.9 32	21.65 24.6 24.6 29.95 24.3 Radial 22.38 25.75 28.25 29.5 20.25 22.37 20.25	Radial 15.7 16.5 22.0 16.5 15.0 15.7
				048 0			20 1400	CZI									α.				****					
Walter 60 Walter 85 Walter 120 Walter Castor Walter III Walter IV Walter Jupiter	Radial Radial Vert	Air. Air. Wat	9-4.14x4.72 7-5.31x6.59 6-5.90x7.09	573 . 4 1037 1159	6.0 6.3		60-1400 85-1400 120-1550 240-1750 185-1360 240-1400 420-1750	90-1500 130-1650 340-2000 270-1400 320-1400	1550 1750 1360 1400	1550 1750 1360 1400	.506 .506 .506 .48 .48 .48 .495	.035 .035 .035 .035 .035 .035		279 352 546 631 682 803	3.94 2.92 2.27 3.3 2.84 1.91	1-Solex. 1-Zenith. 1-Zenith. 1-Zenith. 1-BMW. 1-BMW. 1-Trip	Sein Sein Sein° Bos Bos Sein	M M M M M	9	Seino	HM HM HM HM HM HM	31.4 20.7 20.7 28.4 62.2 64.5 28.9	37.0 37.0 39.0 46.5 41.4 41.8 55.2	19.6 19.6	Radial Radial Radial Radial	Radial Radial Radial
ABBREVIATIONS: †—Outside diamete radial engine °—Others also. *—Engine of foreig §—1928 Specificati A-M—Aero-Marine B-—Battery.	er of Cyles gn mfr. ons.	ls. for	Berl—B BM—B Bes—B B.T.H CA—Co Clau—C d—Dua	attery osch. —Briti Iousto ompres Claude	and I sh Th	omps	eto. on	D-R—I Ducel— Ecl—Ec EM—E Ens—E H—He: HC—H	Duce clipse llectri lnsign xagon and c	ellier. Bendi c Mot al. rank.	X.		**	. T	1. 1	Magneto. ontal. ed V. ed W.	Si Si Si	in—S em—S olit—S	Saln cint Sien Split	nal. lucts ller Swinson. tilla. nens. dorf. omberg		T V V V V V V V V V V V V V V V V V V V	rip—'. ar—V ert—' V—3 t Vat—' Vatf— Vinfd—'	Criple ariou Vertico anks Water Watf —Win anks	ex. sal. of Cylin ord. ofield. of cylind	nders.

STANDARD signs for use on the United States Highway System were adopted by the Joint Board of Interstate Highways in September, 1925, and since that time, according to a check made by the United States Bureau of Public Roads, 28 states have completed the marking of the system within their borders. The signs are of two general classes—danger and caution signs, and standard route markers.

Arkansas, Oregon, Connecticut, South Carolina,

Louisiana, Delaware, Nevada, and Idaho have marked 75 to 99 per cent of the roads. The 28 states which have completed the task are: Arizona, Georgia, Illinois, Indiana, Iowa, Kansas, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Nebraska, New Hampshire, New Mexico, North Carolina, North Dakota, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Dakota, Vermont, Virginia, West Virginia, Wisconsin, Wyoming.

1928 Automotive Exports Reach Record-Breaking Value

American products worth \$661,956,115 are shipped to other countries. 658,498 cars and trucks are sold abroad. Forty foreign assembly plants now operating.

By George E. Quisenberry

Editor, The American Automobile (Overseas Edition)

AUTOMOTIVE exports from the United States and Canada attained new records in both volume and value during 1928 with foreign shipments of cars, trucks, tires, parts, equipment and other products having a combined value of \$661,956,115. Total shipments of cars and trucks to more than 100 countries and territories in all parts of the globe were 658,498, over 25 per cent more than were exported during 1927.

Exports of cars and trucks in 1925, with Ford plants all over the world working full-time, were about 522,000 but during 1928, with Ford plants outside this country and Canada shut down for a large of the year, nearly

140,000 more units were exported.

For the first time this year a new classification of exports has been used which permits the separation of parts, accessories and service equipment into a number of individual items. No comparison with previous years is possible for the detail items but shipments of all items from the United States during 1928 were nearly \$50,000,000 greater in value than in 1927.

Increased foreign sales were distributed fairly uniformly among all markets and, with the exception of Ford, was shared in by all makers to a large extent.

Foreign assembly plants increased to 40, including the addition of two by General Motors Corp. Total foreign sales of vehicles of U. S. design—including Canadian output as well as United States exports—reached the enormous total of over 800,000 vehicles.

As was true in 1927, Australia was again the leading foreign market for motor vehicles of American design although she took fewer vehicles during 1928 than during 1927. Argentina was close second last year, much closer than in 1927, with Brazil in third

place as she was in 1927.

With the exceptions of Australia, in the first place, and Denmark, in the last place of our list of leading export markets, shipments during 1928 were ahead of 1927 to every country. In some the increase was surprisingly large as, for instance, to Sweden where 1928 exports were over 300 per cent greater than during 1927 and to New Zealand and Mexico where 1928 exports were over 100 per cent better than 1927.

In general, both Europe and South America are increasing their automotive purchases yearly and American manufacturers are getting a very substantial

share of the business.

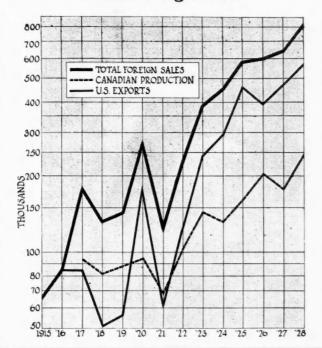
Total Exports and Foreign Assemblies—U. S.

	Total Exports	Total Foreign Assembly Sales
1913	28,486	
1914	27,574	
1915	67,373	
1916	85,364	
1917	85,092	
1918	51,260	
1919	56,389	
1920	177,297	
1921	60,739	19,296
1922	125,880	45,444
1923	240.091	75,985
1924	293,115	116,148
1925	428,564	152,262
1926	393,600	145,774
1927	462,880	192,981
1928	582,277	229,000

How U.S. and Canadian Exports Were Distributed to Major Markets—1928

Country	Cars	Trucks	Total 1928	Total 1927
Australia 49	,572	20,150	69,722	73,600
Argentina42	,764	15,856	58,620	46,474
Brazil23	,380	14,311	37,691	26,035
South Africa 25	,365	7,691	33,056	25,960
British India14	,740	12,468	27,208	17,075
Belgium19	,523	5,629	26,152	17,965
United Kingdom .18	,399	7,051	25,450	23,901
Sweden 18	,229	6,950	25,179	6,811
New Zealand15	,772	3,022	18,794	8,415
Mexico	,861	3,274	16,135	7,839
Germany12	,639	2,758	15,397	9,474
Spain 9	,610	4,460	14,070	10,721
	,900	4,472	8,900	22,484

Total Foreign Sales

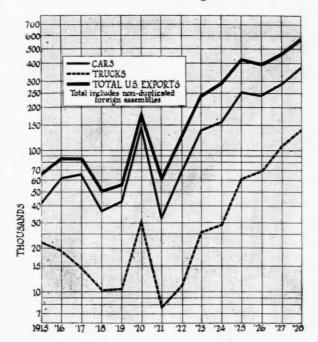


Export Shipments by Value

			19:	rease 28/27
-	1928	1927	1926 Per	Cent
Passenger Cars— From United States From Canada	\$263,574,394 25,179,991	\$207,966,456 22,156,871	\$176,481,302 25,779,659	26.5 13.
Total Passenger Cars		\$230,123,327	\$202,260,961	25.
Motor Trucks				
From United States From Canada	\$91,321,468 8,696,324	\$70,123,600 6,274,406	\$47,079,424 6,957,242	30. 38.5
Total Motor Trucks	\$100,017,792	\$76,398,006	\$54,036,666	31.
Total Cars and Trucks	\$388,772,177	\$306,521,333	\$256,297,627	26.
Tires-				
From U. S., total	\$38,945,410 33,066,491	\$40,254,722 33,749,013	\$30,839,589 24,358,907	*3. *2.
Inner tubes	3,797,836	3,499,317	3,024,177	8.
Solid	2,081,083	3,006,392	3,457,505	*31.
From Canada, total	\$19,703,247	\$20,495,892	\$17,524,940	*4.
Casings	16,735,971	16,913,065	14,645,309	*1.
Inner tubes	2,605,729	3,143,901	2,567,105	*17.
Solid	361,547	438,926	312,526	*17.
Total Tires	\$58,648,657	\$60,750,614	\$48,364,529	*3.5
Motorcycles	\$4,402,576	\$4,373,808	\$4,915,949	5
Tractors	44,230,835	34,539,993	30,485,519	28.
Cars and trucks, elec.	216,944	207,040	155,668	5.
Automobile engines.	13,026,143	10,685,495	12,522,189	19.
Marine engines	3,099,840	2,056,081	1,721,726	51.
Trailers	396,403	419,172	339,987	*5.5
Storage batteries	3,400,948	3,673,003	3,443,421	*7.
Parts, Accessories and	Service Eq	uip.—		
From Canada	\$2,152,082	\$3,434,465	\$5,485,486	*37.
From United States	143,599,550	99,335,620	83,927,732	
Accessories, auto-				
motive	\$7,683,138		*****	
Parts for assembly	62,420,537	*****	*****	
Partsforreplacement		*****	*****	
Ignition parts	1,079,941		*****	
†Service and Garage				
Equipment	2,258,318	*****	*****	
Tire Service Equip-	1 174 010			
ment	1,154,813 3,972,109	*****	*****	
Gas and Oil Pumps	289,439	*****	*****	* *
Battery Chargers Shock Absorbers	1,253,992	******		* *
Bumpers	344,228			**
Spark Plugs	1,417,790	*****		
Brake Lining	1,421,658			
Grand Total	\$661,956,155	\$535,197,305	\$456,425,702	23.5
Granu I Otal	A001'990'199	A000'121'000	\$100,720,102	40.0

* Decrease.
† Not including air compressors, electrical tools, small hand tools, etc.

Total U.S. Exports



Export Shipments by Units

			1	ncrea:	se	
				1927, Per	Unit \	/alue
	1928	1927	1926	Cent	1928	1927
Passenger Cars—						
From Canada	368,328 55,612	278,748 39,900	238,481 53,628	39.0	\$715.00 451.00	\$743.00 551.00
Total passenger cars Motor Trucks—	423,940	318,648	292,109	33.0	\$682.00	\$723.00
From U. S From Canada	138,782 23,776	105,447 17,510	66,775 20,692	31.5 35.5		\$665.00 358.00
Total motor trucks.	162,558	122,957	87,467	32.0	\$615.00	\$619.00
Total cars and trucks	586,498	441,605	379,576	33.0	****	
Branch Assemblies (not otherwise reported)— Cars and trucks	72,000	80,000	157,500			
Grand Total of Cars and trucks	658,498	521,605	537.076	26.0		
Tires— From United State Casings	,692,896 ,806,076	1,627,179	1,127,175	2.0 10.0 *35.0		
From Canada: Casings1 Inner tubes1 Solid	,550,085	1,796,619	1,135,948	*13.5 *13.0	\$10.00 1.68 28.68	1.75
Other Automotive Products— Motorcycles Tractors	18,934 53,850	19,469 56,562		*3.0 *5.0	\$232.00 820.00	
Automobile engines Trailers Storage batteries.	124,305 854 328,196	97,053 928 301,980	970	26.5 *7.0 9.0		
Shock absorbers	500,551					
Bumpers	67,891					
Gas and oil pumps	97,706	****		474		****
Battery chargers	60,356					****
Spark plugs4	,550,312	****	****		****	
Brake lining (ft.).7	, (49, (43		****	* *		****

* Decrease.

(Alaska, Porto Rico and Hawaii not included except for tires—8,509 cars and trucks in 1928.)

The information on this page was tabulated from the official 1928 export totals provided to this magazine by the Automotive, Rubber, Electrical and Agricultural Implements divisions, Bureau of Foreign and Domestic Commerce, Washington, D. C., and the Dominion Bureau of Statistics of the Department of Trade and Commerce, Ottawa, Canada, and by The American Automobile.



American Car Exports –



	Total		1928		Total		Total 1 9 2 8				Total	
COUNTRY	1927	Up to \$1,000	\$1,000 to \$2,000	Over \$2,000	1928	COUNTRY	1927	Up to \$1,000	\$1,000 to \$2,000	Over \$2,000	1928	
EUROPE							14,074	18,416	3,674	621	22,7	
ustria	\$106,327	\$47,150	\$66,493	\$20,084	\$133,727	Brazil	\$9,288,209 115	\$8,345,768 36	\$4,001,145 7	\$1,451,115	\$13,798,6	
zores and Madeira Is	77,735	62 33,763	8,620	2,054	71 44,437	British Guiana	51,188 1,786	23,274 2,443	8,055 1,384	162	31,3	
Belgium	13,686 12,221,059	13,437	5,241	843	19,521	Chile	1,288,717	1,326,960 770	1,412,520 1,138	343,459 334		
	42	7,798,939	6,011,520	2,104,033	215	Colombia	1,785 1,962,898	537,682	1,318,987	834,712		
ulgaria	36,780 501	94,340 307	39,133 172	3,077 36	136,550 515	Ecuador	148,147	69,147	145,931	48,916	263,	
zechoslovakia	430,013 14,841	189,129 7,441	196,343 1,298	76,331 108	461,803 8,847	Paraguay	44,342	51,655	37,930		89,	
enmark and Faroe Is	8,493,038 2,430	3,806,930 1,799	1,430,393 1,038	255,461 175	5,492,784 3,012	Peru	831 625,656	1,206 602,231	394 428,589	74 156,749	1,187,	
inland	2,403,210 1,700	1,119,327	1,158,810 1,280	424,699 474	2,702,836 2,888	Surinam.	23 19,853	16,102	10,814		26,	
rance	2,222,094 8,473	618,506 8,723	1,603,637 2,808	1,168,017 1,076	3,390,160 12,607	Uruguay	3,248 2,318,531	4,485 2,246,318	1,039 1,203,411	141 314,726	5,	
Germany	8,595,179 1,056	5,149,014	3,110,697	2,542,810	10,802,521	Venezuela	1,858	1,048 519,086	667 740,181	285,796	1,	
Greece	676,179	1,609 814,355	387 412,244	93,586		venezueia	1,684,162	010,000	140,101	200,100	1,010,	
lungary	324 313,791	263,463	226 $250,430$	$\frac{33}{71,728}$	714 585,621	ASIA *						
celand.	$\frac{17}{14,226}$	28,328	34,792	2,560		Aden	38,819	28,103	7,977	4,975	41,0	
rish Free State	96 95,078	260 131,580	76,917		330 208,497	Arabia, Hejaz and Irag	326 187,570	80,537	$\frac{26}{28,172}$	13,787	122,	
taly	718,755	1,710 914,282	737 854,799	119 284,988	2,566	British India	3,531 2,978,304	4,832 2,801,401	1,992 1,987,156	255,067		
atvia	66 72,605	39 22,094	9,910	2,036	49	British Malaya	834 667,514	448 288,607	207 227,790	19,447		
ithuania	47	48	44	2	94	Ceylon	550	291,670	158 163,659	7 16,982		
	44,796 58	25,629 96	50,951 55	5,849	82,429 152		488,726 845	1,627	143	26	1,	
Malta, Gozo and Cyprus Is.	49,821 2,816	61,606 3,493	56,320 1,219	2,141 227	120,067 4,939	China	665,259 33	993,282 216	175,850 6	64,592		
Netherlands	2,745,505 1,321	1,882,428 840	1,370,733 506	518,678 49	3,771,839 1,395	French Indo-China	16,832 249	73,461 272	6,482 69	2	79,	
Norway	1,235,247 456	581,490 1,311	566,302 361	116,664 49	1,264,456	Hong Kong	153,948 2,685	174,543 7,195	79,641 1,054	4,529	258, 8,	
Poland and Danzig	394,684 1,291	722,513 1,079	371,457 447	119,170 68		Japan and Chosen	2,316,285 6,584	4,241,388 6,682	1,328,849 1,200	426,802 113		
Portugal	918,869	594,501	491,871	163,926	1,250,298	Java and Madura	4,550,539	3,258,018	1,288,171	236,376	4,782,	
Rumania	2,928 1,514,156	3,359 1,881,330	1,060 1,092,813	70 160,814		Kwantung	90,418	142,894	23,070	33,138	199,	
Russia	139,229	287 123,910	142,777	58,345	325,032	Netherland E. Indies, Other		678 459,240	147,888	46,187	653,	
Spain	7,515 7,708,885	6,034 3,643,376	2,912 3,453,938	1,553,650	9,603 8,650,964	Palestine and Syria	885 650,768	7,002 591,659	352 373,829	38,442	1,003,	
Sweden	5,651 5,177,551	7,115,666	3,756 4,008,302	346 840,313	18,226	Persia	310 161,027	256,708	61,024	8,898		
Switzerland	1,171 1,351,547	1,433 1,012,723	1,095 1,271,087	179 389,782	2,707	Philippine Islands	3,422	3,018 1,776,691	538 695,411	300,594	3,6	
United Kingdom	11,185 8,868,034	9,535 5,060,867	1,109	552 1,273,932	11,196	Russia	25 18,269	2,900		2,970		
Yugoslavia and Albania	285	561	1,380,425	32	694	Siam.	98	97	5 254		70,	
NORTH AMERICA	241,048	274,468	114,302	81,638	470,408		74,679	64,659 942	5,354 130	25	1,	
	59	52	16		68	Turkey	100,389	501,861	140,859	68,649	711,	
Barbades	51,590 14	33,132 31	17,648 2		50,780	OCEANIA						
British Honduras	10,611 /68	14,192 241	1,985	2	16,177 252	Australia	40,954 26,685,615	30,590 14,502,483	7,162 7,610,955	1,361,297	23,474,	
British West Indies, Other.	90,451 34,300	96,441 32,832	10,078 7,857	3,600 1,564	110,119 42,253	British Oceania	93,774	25,572	27,855	4,953		
Canada	26,426,826 342	19,474,252	9,860,696	4,109,969	33,444,917		31	25	1,256		13,	
Costa Rica	336,924	97,738	250,781	41,051	389,570	French Oceania	21,487 5,389	12,004 8,275	1,875	101	10,	
Cuba	4,483 3,337,540	4,872 2,396,592	922 1,154,793	499,020	4,050,405	New Zealand	4,014,655	4,624,299	1,994,018	257,400	6,875,	
Dominican Republic	1,040 719,384	561,757	255 267,376	136,018	965,151	AFRICA						
French West Indies	33 16,969	74,414	7,047	1,861	146	Algeria and Tunisia	41,198	81,098	11,909		93,	
Guatemala	345 429,766	75,131	203 242,071	86 190,374	419	Belgian Congo	24	75 39,471	2,891		42,	
Haitian Republic	146 135,561	156 94,949	86	2	244	British East Africa	680	351 315,984	218 229,270	3		
	67	64	90,087	3,614	75		17,880	15,799	5,846	200	21,	
Honduras	47,011 538	38,821 534	4,460 111	18,645 /4	659	British South Africa	334	8,839,117 273	6,194,876 176	24		
Jamaica	404,963 6,028	312,087 11,273	116,289 1,361	33,965 207	462,341 12,841	British West Africa	142	164,769 77	02	3		
Mexico	4,127,931 153	5,681,917 159	1,681,442	571,987 8	7,935,346 267	Canary Islands	134,600 3,433	46,703 2,131	72,350 539		127,	
Netherland West Indies	142,351 300	86,203 296	110,855	16,584		Egypt		1,135,279 155			1,896,	
Newfoundland & Labrador	229,581 //8	176,023	96,627	5,397		French Africa, Other	43,166		11,482		85,	
Nicaragua	103,291 906	32,272	68,108	7,157	107,537	Liberia					24,	
Panama	806,166	533,183	359,981	62,952		Morocco			128,801	5,811	308,	
Salvador	256 293,506	65,360	186,130	138,440	389,930	Mozambique	288 244,179	151,854	102,526	7,456	261,	
Trinidad and Tobago	101,868	144	43,168	/	189	Portuguese Africa, Other	77,966	107	25		83,	
Virgin Islands of U. S	38 20,130	58	11,067		65 41,399	Spanish Africa, Other	35	33	35	2	?	
SOUTH AMERICA	25,250	50,002	22,007		12,000	Other Countries	707	97	29	1		
	34,245	31,356	7,437	941	39,734	Other Countries					368	
Argentina	21,357,379	15,852,626	8,095,594	2,313,482	26,261,702	II	278,748	280,440	76,334		\$263,574	



American Truck Exports



COUNTRY	Total		1928		Total	COUNTRY	Total	1928			Total
	1921	Up to 1 Ten	1 to 2½ Tens	Over 2½ Tons	1928		1921	Up to 1 Ton	1 to 2½ Tons	Over 2½ Tons	
EUROPE					121						
ustria	\$8,213	\$94,467	\$11,263		\$105,730	Chile	\$750,553	\$245,643	\$947,531	\$192,784	\$1,385,9
zeres and Madeira Is	32,540	21,046	1z,645		33,691	Colombia	1,660,326	309,456	8/6 1,410,604	279,555	1,999,
elgium	4,123 1,799,887	5,418 2,137,540	116,019	28 23,497	5,629 2,277,056	Ecuador	63,482	. 13,354	48 46,991	11,376	71,7
zechoslovakia	25,613	29.281	20 21,524	988	51,793	Paraguay	42,984	56, 139	68 64,090		120,
Denmark and Faroe Is	7,569 3,430,213	3,932 1,627,251	535 346,191	9,841	4,472 1,983,283	Peru	681,485	110,014	558 454,372	40,439	604,
inland	256 286,252	210,712	522 458,173	80,325	786 749,210	Uruguay	1,163	1,082 515,043	336,829	72 187,785	1,039,
rance	300 147,988	1,211 565,473	393 116,929		1,604 682,402	Venezuela	684 715,487	285 212,548	592 540,220	85,761	838,
Germany	774 404,118	1,998 995,704	750 396,410	16,794	2,758 1,408,908	ASIA					
Greece	132,821	703 370,503	248 212,862	3,200	953 586,565	Aden	3,466	1,608	7,545	3,155	12,3
lungary	52,318	15,356	33,433		48,789	Arabia, Hejaz and Iraq	122,004	66,362	102,949		169,
celand	7,083	5,348	10,137		23 15,485	British India.	1,913 1,452,590	4,602 2,602,171	7/9 691,599	20,638	3,314,
rish Free State	35 28,782	29 20,325	54 31,356		51,681	British Malaya.	137 158,041	39,302	47 62,978	26,138	128,
taly	67,949	264 137,490	76,755		430 214,245	Ceylon	344 358,696	195 153,168	203 255,182	25,425	433,
atvia	8 8,469	35 31,761	29 27,313		64 59,074	China	470 333,471	33 <i>I</i> 273,173	563 478,015	12,948	764,
Malta, Gozo and Cyprus Is.	6,910	8,730	6,968		30 15,698	French Indo-China	37 11,811	4,427	12,202		
Netherlands	148 197,004	109 101,051	372 311,370	20 58,266	501 470,687		135	48	49	********	16,
	267	234	252 331,262	55 162,488	541 686,977	Hong Kong	54,593 387	34,059 924	47,630 911	189	81,
Norway	384,315	193,227 325	284	4	6/3 418,006	Japan and Chosen	555,446 3,896	689,467 4,837	751,219 437	287,876 36	1,728,
Poland and Danzig	7,627 615	180,903 652	223,942 222	13,161	877	Java and Madura	2,017,435 /20	2,011,243 24	519,800 55	49,854	2,580,
Portugal	345,264 740	358,408 1,063	238,347 192	5,343	602,098 1,267	Kwantung	90,262 165	17,941 195	58,929 121	3,345	80,
Rumania	290,046 184	581,728 129	132,026 99	10,890 50	724,644	Netherland E. Indies, Other	131,867 146	135,302 215	131,277 344	6	266,
Russia	233,422 3,203	53,241 3,461	76,765 920	259,692 25	389,698 4,406	Palestine and Syria	180,597 487	158,441 352	379,812 82	9,008	547,
Spain	1,698,721 840	1,786,633 6,071	992,355 750	47,577 129	2,826,565 6,950	Persia	144,794	190,984 1,587	110,312 538	21,483 28	322,
Sweden	757,126 29	2,910,177 5	749,647 20	112,529	3,772,353 27	Philippine Islands	909,089	786,892 6	523,984	59,868	1,370,
Switzerland	34,763 5,475	3,903 7,212	21,583 873	1,564 78	27,050 8,163	Russia	77	3,580 126	3,319	**********	6,
United Kingdom	2,708,009	3,134,820	570,024 103	136,510	3,841,354 156	Siam	51,146 116	85,161 589	13,781		98,
Tugoslavia and Albania		26,104	69,888	767	96,759	Turkey	46,253	289,004	102,087	3,920	
NORTH AMERICA	3	,	3		4	OCEANIA	24,407	15,469	1,722	144	17,
British Honduras	1,913	426 54	4,824		5,250 98	Australia	14,361,174	6,462,806	1,646,519	249,969	
British West Indies, Other	80,095 4,233	17,822 2,592	24,502 3,704	14,028 657	56,352 6,953	British Oceania	9,246	10,840	9,286	********	20,
Canada	5,773,078	1,851,499	4,878,264	1,791,568	8,521,331 197	French Oceania	2,804	2,556	5,673		8,
Costa Rica	106,562	70,042	131,357	18,006	219,405 1,407	New Zealand	7,726 889,821	7,827 780,381	506,077	97 122,953	1,409,
Cuba	1,842 1,947,619	262,923	827,783	440,045	1,530,751	AFRICA			40		
Dominican Republic	315 258,997	95,554	199,391	1,431	328 296,376	Algeria and Tunisia	8,298		19,653		19,
French West Indies	7,829	24,396	8,114		32,510	Belgian Congo	53 24,350	55,209	29 18,687		73,
Guatemala	225,620	56,545		20,974	388,137	British East Africa	348 288,600	289,191	152,960		442,
Haitian Republic	60,046	36,257	55,326		102,886	British South Africa	3,092 2,221,914	3,852 1,973,787	582 820,220	110,297	2,904,
londuras	58,952	25 14,311	31,739	3,661	49,711	British West Africa	2,357 2,521,427	1,020 853,720	342 474,839		1,328,
Jamaica	207 145,297	50,402	132,417	10,563	193,382	Canary Islands	58 66,543	26,939	52 56,660	10,926	
Mexico.	1,743 1,459,882	2,045 999,445	1,089	140	3,274 2,595,580	Egypt	1,417 565,529	1,050 476,949	185 93,552	2	1,
Netherland West Indies	102,340	85 61,282	43,522	19	153 157,342	French Africa, Other	194 105,395	75,304	6,928		82,
Newfoundland & Labrador.	16,740	14,808	6		22,409	Liberia	58 69,643	29 22,725	17,420	1	
Nicaragua	61,018	8,129	14	1	26 30,630		377	630 283,060	11,420	6,786	
	522 375,114	51,203	316	11	337,570	Morocco.	171,656 74	94	64		
Panama	91	5	13	3	43,182	Mozambique	84,493 115	69	51,695 53		110,
Salvador	142,919 60 75,907	35	39	1	75	Portuguese Africa, Other.	95,435 23	42,200 16	51,136	2	93,
Trinidad and Tobago	75,807 19	26,579 7	6		63,308	Spanish Africa, Other	22,300 295	196		6	
Virgin Islands of U. S	13,778	4,851	6,800		11,651	Other Countries	180,414	102,692	79,281	3,718	185
SOUTH AMERICA	10,552	12,196			15,771						
Argentina	7,377,000 66	6,323,431 50	4,040,786	3	94	TOTAL	105,447 \$70,123,600			3,099 \$7,769,825	
Bolivia	99,425	49,548 11,449			126,078 14,306	1					



U. S. Parts and Tires _



		PARTS-	-VALUE				T	RES-VALUE			
	1925	1926	1927	1928	1925	1926	1927	Casings	1 9 Inners	2 8 Solids	Total
EUROPE	217 001	2100 000	****	***************************************	- A 4 7 0 F 0			I			
Austria	\$17,331 11,648	\$100,003 16,140	\$117,811 14,902	\$302,688 19,511	\$47,959 3,623	\$72,871 10,088	\$487,088 15,843	\$448,958 16,631	\$51,382 3,738	\$765 295	\$501,105 20,664
BelgiumBulgaria.	. 2,758,688	2,074,875 3,014	1,452,825 5,965	5,424,532 7,535	515,168 5,240	374,799 2,554	450,661 21,590	972,698 6,125	100,744 853	10,571 238	1,084,013
Czechoslovakia	22,117	46,211	89,228	87,376	202,063	368,212	739,576	430,909	45,056	51,425	7,210 527,390
Czecheslovakia Denmark and Faree Islands Estenia.	4,242,708 1,632	4,141,444 3,406	2,466,680 4,377	2,155,057 7,325	1,027,389 4,679	652,701 2,301	1,514,173 22,447	1,397,185 20,493	144,916 3,708	1,895 1,679	1,543,996 25,880
Finland	92,313	227,940	391,145	398,569	174,633	261,523	370,595	349,339	38,246	431	388,016
France Germany		2,385,969 1,255,914	2,025,686 9,740,885	3,611,301 10,717,735	530,121 348,735	361,914 1,819,243	404,027 2,528,616	343,075 1,601,289	34,372 159,272	5,512 2,426	382,959 1,762,987
Gibraltar	5.503	3,048	3,024	2,441		279	1,540	4,855	369		5,22
Greece	140,574 13,407	62,775 23,130	170,980 100,478	210,291 62,839	284,696 8,496	145,327 23,318	310,555 93,630	260,750 105,690	31,318 14,533	4,835 386	296,903 120,609
rish Free State	9,669	9,902	8,854	16,632	18,788	19,261	17,997	11,534	1,382		12,916
Italy	1 020 846	420,654 1,028,927	232,452 573,964	612,086 454,588	28,064 93,792	31,597 97,984	50,049 633,652	58,094 1,018,322	10,008 114,737	513 23,815	68,618 1,156,874
atvia	3,045	6,437	13,200	18,646	29,380	11,899	14,882	13,453	1,844		15,29
atvia. Lithuania Malta, Geze and Cyprus Is. Netherlands	9,571	1,648 14,749	4,222 8,852	3,863 16,201	3,160 5,125	6,250 753	8,197 6,952	5,889 2,068	335 470		6,22 2,53
Netherlands	802,149	731,735	959,285	926,545	544,420	603,469	1,020,659	821,523	77,016	654	899,193
Norway Poland and Danzig Portugal.	187,639 64,422	164,052 7,805	237,997 22,798	252,517 676,732	428,869 77,360	419,573 48,580	371,770 389,785	304,891 650,660	35,779 88,983	11,204 787	351,874 740,430
ortugal	84,744	147,869	186,543	134,741	94,318	155,671	230,102	199,786	24,673		224,45
Rumania	04,810	77,979 25,607	145,441 363,829	206,539 188,367	32,298 71,025	76,671 36,501	304,638 25,074	524,745 36,755	52,528 6,673	1,119 3,380	578,392 46,808
Spain	1,495,837	1,594,313	1,316,162	1,682,812	573,138	883,796	1,572,196	1,652,454	149,542	65,594	1,867,590
Sweden	722,424 82,374	761,759 108,067	1,104,738 117,940	974,523 183,515	1,098,214 172,252	906,099 424,432	1,306,062 682,319	1,185,355 471,695	160,844 53,742	20,493 764	1,366,693 526,20
Farkey	.1 40.5701	44,721	71,929		3,677	15,949	57,937	93,044	15,381	3,537	111,963
United KingdomYugoslavia and Albania	5,344,252 15,912	4,459,866 19,982	5,152,244 14,571	6,249,274 15,689	2,970,680 40,226	3,230,202 48,925	3,240,545 86,824	565,220 39,149	68,918 6,925	21,323 128	655,461 46,200
NORTH AMERICA		20,002	,-,-	20,000	10,220	20,020	00,021	00,110	0,020	120	10,20
Barbados	32,113	41,168	32,510	33,163	9,459	10,668	9,316	13,732	2,022	2,936	18,696
British West Indies, Other.	5,682 55,800	10,231 74,937	11,859 60,766	8,514 64,461	3,190 28,560	3,206 25,110	2,910 10,991	5,641 17,337	675 3,062	261 2,250	6,577 22,649
Barbados. British Honduras. British West Indies, Other. Canada. Cesta Rica. Cuba. Dominican Republic. French West Indies. Guatemala. Haitian Republic. Honduras. Hanaica.	. 28,209,210	31,780,943	36,962,976	50,690,534	439,175	349,857	488,389	161,522	51,419	28,812	241,753
Cuba	28,198 1,204,080	47,528 958,209	71,011 1,056,110	72,344 1,024,366	34,762 1,516,825	73,110 1,821,364	85,418 1,828,594	125,324 1,082,338	12,144 171,633	4,960 304,711	1,558,683
Dominican Republic	180,435	201,998	193,803	184,074	219,304	164,282	278,047	184,374	20,174	15,605	220,153
Guatemala	19,717 75,772	8,487 139,714	13,489 184,075	15,782 140,858	22,884 65,936	17,316 127,368	12,504 153,277	9,776 123,000	2,105 15,204	1,657 579	13,538 138,788
Haitian Republic	79,848	93,395	75,633	73,034	79,347	89,791	98,355	115,670	14,074	1,223	130,96
Jamaica	36,146 182,932	34,660 188,123	26,971 231,794	37,529 216,573	43,534 43,805	63,466 22,085	44,148 51,087	28,328 40,317	$\frac{3,371}{3,928}$	15,273 10,223	46,972 54,468
Mexico.	1,565,032	2,021,217	1,632,497	1,982,985	1.297.965	1,289,128	1,249,917	1,278,272	160,663	63,912	1,502,847
Newfoundland and Labrador	23,069 23,630	34,816 20,566	52,557 27,317	72,160 30,994	44,398 29,517	49,424 30,601	72,137 24,880	75,633 24,041	15,237 4,803	2,983 328	93,853 29,172
Mexico. Netherland West Indies Newfoundland and Labrador Nicaragua	16,907	20,642	23,407	31,871	18,026	18,104	22,026	20,687	4,454	1,658	26,799
		176,061 92,509	291,896 80,096	400,295 64,005	250,678 84,503	262,376 142,539	194,266 101,933	150,286 74,903	24,775 10,350	13,563 18,105	188,624 103,358
Salvador. Frinidad and Tobago. Virgin Islands of U. S	71,983	57,000	82,493	55,034	26,343	23,626	38,516	23,834	1,791	1,501	27,126
Virgin Islands of U. S	10,625	9,145	9,557	14,794	6,631	5,436	5,147	5,253	991	2,073	8,317
SOUTH AMERICA	5,986,614	6,598,419	4,113,594	6,672,780	2,509,524	3,594,444	3,859,020	2,563,940	316,647	147,853	3,028,440
SOUTH AMERICA Argentina Breatil Brazil British Guiana Chile Colombia Ecuador French Guiana Paraguay Peru Surinam Uruguay Venezuela ASIA	44,259	62,768	82,293	59,626	31,674	33,888	49,256	41,859	4,620	703	47,182
Brazil	5,076,652	3,612,032 15,793	3,093,085 18,106	3,505,188 18,663	1,123,382	1,169,783 5,820	1,959,160 2,767	1,446,900 255	99,209 12	69,678 329	1,615,787
Chile.	900,915	1,006,850	802,941	849,844	429,618	438,362	613,383	455,254	52,999	50,220	558,473
Colombia	426,620 42,831	686,081 36,826	893,221 31,863	1,066,343 32,688	323,484 45,259	535,102 49,399	646,644 61,348	747,645 59,070	100,012 7,417	47,423 382	895,080
French Guiana	2,540	1,346	1,300	2,681	2,014	329	2,073	398	111	84	66,869 593
Paraguay	8,669 624,466	15,898 513,046	24,306 467,416	27,512 568,419	4,799	10,436	42,508	20,386	2,117	17 000	22,503
Surinam.	4,145	3,334	4,553	6,941	367,319 3,533	393,404 1,731	422,349 2,366	328,303 4,173	39,857 412	17,068 72	385,228 4,657
Uruguay	547,709 349,234	506,268 564,137	632,029 513,965	663,644 612,867	457,112	524,105	442,060	418,429	37,034	19,824	475,287
ASIA	049,204	002,107	313,800	012,007	439,716	552,512	521,625	388,571	44,787	646	434,004
Aden.	. 3.325	7,743	15,102	12,978		7,017	6,906	3,619	458	312	4,389
Asia, Other British India	693,357	161 995,138	1,852 1,440,708	266 1,917,231	286 516,586	354 571,833	1,192,037	295 852,650	68,205	56,391	977,246
British Malaya	. 507,124	621,313	565,784	562,993	265,396	250,413	466,036	717,403	30,063	9,009	756,475
Ceylon	110,249 312,609	166,964 368,547	149,717 410,076	133,478 538,355	124,853 238,721	223,415 388,965	198,600 319,266	105,277 422,188	8,567 49,279	14,522 18,295	756,475 128,366 489,765
French Indo-China	. 8,607	4,043	3,711	11,054	532	2,114	2,443	32,047	7,756		39.803
Hejaz, Arabia and Iraq Hong Kong	. 26,097	52,015	66,854	71,613	77,510	117,492	56,164	39,665	5,779	2,623	48,06
Japan	. 1,848,987	60,626 2,873,991	124,405 6,128,719	134,102 9,764,980	17,914 1,090,165	6,911 1,248,610	3,360 1,009,418	22,351 1,182,839	3,258 139,521	969 174,295	26,578 1,496,65
Java and Madura		400,271	692,209 23,205	917,069	471,267	525,641	673,137	476, 151	36,914	18,075	531,14
Kwantung Netherland East Indies, Other	91,979	35,483 129,432	157,998	35,711 207,369	29,716	2,609 59,588	3,679 123,788	1,738 128,899	209 10,354	732	1,94° 139,98
Palestine and Syria	120,972	143,306	182,111	171,138	127,200	115,572	166,613	223,645	20,760	1,837	246,24
Persia Philippine Islands.	5,265 538,159	22,066 672,728	131,339 698,536	126,998 763,442	1,364		112,500 1,814,795	103,000 1,204,620	12,433 194,780	858 45,710	116,29 1,445,110
Philippine Islands.	. 704	115	698,536 23,432 74,745	5,811			4,477	*********			********
Siam. Turkey.	12,350 7,871	37,303 19,430	30,82 ₆	70,593 135,049	2,187 197	7,072 6,588	13,872 47,651	4,857	93		4,950
OCEANIA		20,200	00,026	200,010	100	0,000	11,001				********
Australia British Oceania	3,497,407	4,065,808	4,522,477	4,573,392	1,881,308	1,733,560	1,808,425	343,163	19,046	264,623	626,832
French Oceania	13.694	22,097 9,456	26,758 12,295	14,896 13,050	2,154 7,071	11,852 10,348	3,700 6,851	8,862 7,748	1,111 1,412	369 629	10,343 9,789
New Zealand	1,024,830	1,258,123	1,114,038	1,131,414	1,127,898	499,335	222,808	147,983	20,335	60,668	228,98
AFRICA	0.470	F 007	0.400	4 504		0.004	0.054		4 004		
Belgian Congo	8,473 43,754	5,297 51,216	6,196 23,172	4,584 22,174	1,297	3,204 13,774	9,051 2,205	7,217 223	1,091 29		8,30 25
British East Africa	154,197	186,273	223,862	278,130	84,477	66,898	158,195	171,045	27,015	794	198.85
British West Africa	1,277,706 207,741	1,381,886 201,986	1,517,313 481,283	1,629,582 671,003	389,907 33,946	310,617 65,178	573,722 162,774	414,538 251,018	30,526 40,350	15,471	460,53 291,36
Canary Islands	69,600	78,569	55,486	36,180	79,570	128,639	162,774	97,637	9,114	15,135	291,36
Egypt	119,368	129,075	1,220,945	1,189,921	97,176	140,114	184,204	199,311	32,060	17,176	248,54
Italian Africa.	60,859	109,425 1,924	76,216 5,125	91,167 1,833	6,116 2,206	3,390 1,134	16,118 2,607	10,880 4,020	1,954 1,091		12,83 5,11
Liberia	3,429	3,405	12,404	24,131	6,270	1,675	9,730	7,973	1,437		9,410
Mozambique,	. 68,469 47,339	85,462 27,825	76,173 45,142	109,162 46,275			211,651 20,915	146,214 17,986	18,671 2,164	1,498 198	166,383 20,348
AFRICA Algeria and Tunisia Belgian Congo British East Africa British South Africa British West Africa Canary Islands Egypt French Africa, Other Italian Africa Liberia Morocco Mozambique Portuguese Africa, Other Spanish Africa, Other Other Countries. TOTAL	20,324	36,181	58,630	69,664	10,403	13,213	23,824	29,533	5,380		34,913
Spanish Africa, Other	. 17,228	17,847	16,641	12,088	12,999	4,948	3,683 3,129	28,286	3,209		31,49
Other Countries	. 16,217	2,062	1,853	17,406	23,173	527		1,669	226	2,315	4,210



Miscellaneous Exports



			BRITIS	SH (11 MO	NTHS)			FREN (10 MO		CANADIAN AMERICAN				
COUNTRY	CARS		TRU	UCKS PARTS		CHASSIS		Cars	Trucks and Tractors	Parts	Electrics		Airplanes	
	No.	Value	No.	Value	Value	Ne.	Value	No.	No.	Value	No.	Value	No.	Value
geria and Tunisia	1	£454			£10	1	£150	7,641	943					
gentina	184	79,120	13	£6,868	81,547	496	211,386	228	37	\$18,053			5	\$55,05
stralia	497	169.563	51	22,264	190,528	7,605	1.006.023			572,479	11		7	50,87
elgium	24	7,159			15,064	11	6,175			4,200	1	2,951	1	4,18
azil	19	5,420	10	2,832	44,443	165	63,514	44	5	12,111	7	6,282	5	66,34
ritish Africa	2.180	397,848	187	69,811	200,884	565	309,304			310,981	4	3.033		
ritish India	2.752	586,979	187	142,240	210,535	365	109,933			327,236	2	2,500		
nada	40	23,696	10	3.350	18,073	119	53,602	3	8	021,200	61	114,486	70	766,64
	696	141,470	18	8,110	22,512	49	12,304	-	9	21,004	-			.0010
ylon	150	24,689	8	5,737	7,358	20	10.794			66	R	4,500	0	102,1
hina			0	0,101	12,107	21		565	17	6,847	U	1,000		102,1
enmark	169	38,094			12,107	21	4,741	900	11					
gypt	236	43,346	22	9,747	11,086	97	20,198			2,905		4 000		
ance	752	116,839	10	1,365	42,121	62	61,492			2	3	4,275		
rench Indo-China					3		********	1,759	186	************				
ermany	81	24,180	13	4,256	75,060	25	18,305	804	56	11,944	1	2,469	1	5,50
ish Free State	3,124	558,833	321	147,138	160,603	358	144,512			7,683				
ly	60	15,010			37,680	11	5,459	212	33	180			2	84.9
pan	185	38,528	5	592	13,462	43	9,282	57		17,458			3	63.0
adagascar	200	00,020		002	20,200		-,	356	77	1.003				
exico			9	278	1,501			000		118	4	2,600	21	191.0
		166	-	210	86	A	620	1,521	490	***		2,000		202,0
erecco	140		22	E 740	43,202	91	21,367	1,021	200	3.144				*******
etherlands	143	31,143	22	5,748	45,202	91	21,307	******		161.567				******
etherland East Indies				40.070	07 007	******	100 000					********	*******	******
ew Zealand	1,922	364,140	32	16,679	67,265	571	138,829			288,371		4 000	*******	
orway	57	9,674	1	375	3,744	14	2,423	17	1	876	9	4,000		******
ortugal	75	13,661	18	4,043	21,604	64	9,964		73	***********			******	
ussia	8	1,620	3	949	7,887			45	10	650	1	950		
am	59	10.044			5,127	7	1,070			30,080			4	38,4
pain	254	49,650	8	3,561	20.999	53	10,718	4,881	612	896				
raits	940	170,502	27	11,895	47,933	230	91,143			92,412				
vitzerland	21	3,218		22,500	7,053	2	545		89	280				
nited Kingdom	1	132			.,500		310			102.998	1	2,200	4	24,
nited Kingdom	33	25,996	5	1.371	11,161	3	3,427	93	1	107,496		2,200		
ther Countries	1,670			228,556					1,447	49,126		60,357	38	373.0
tner Countries	1,070	320,043	300	220,000	220,004	002	112,000	11,103	1,220	10,120	00	00,001	36	0,0,0
TOTAL	16.334	£3,276,219	1,333	£697,765	£1,604,202	11.704	£2,499,915	31,662	4.085	\$2,152,166	148	\$216.944	170	\$1.825.

Imports of Motor Cars Into U.S.

													No.	Value
1918										ă.			105	\$ 75,136
1919					4								117	123,025
1920													926	1,026,518
1921													522	876,163
1922													483	802,888
1923													853	884,125
1924													604	841,524
1925													672	1,064,975
1926													813	1,352,984
1927													635	1,218,938
1928													566	1,201,323
т	at.	0.1											6296	\$9,467,599

THE Twenty-Foot Propeller Research Tunnel of the National Advisory Committee for Aeronautics is the title of Report No. 300 of the N.A.C.A. The report, of which Fred E. Wick and Donald H. Wood are the authors, describes in detail the new tunnel of the N.A.C.A. at Langley Field, Va. This tunnel has an open jet air stream 20 ft. in diameter in which velocities up to 110 m.p.h. are obtained. Although the tunnel was built primarily to make possible accurate full scale tests on aircraft propellers, it may also be used for making aerodynamic tests on full-size fuselages, landing gears, tail surfaces, and other aircraft parts, and on model wings of large size.

1928 Canadian Vehicle Exports

->							
	Pass	enger	Tru	icks			
Countries	Number		Number				
	38						
Aden		\$13,632	11	\$4,537			
Argentina	3,329	1,585,599	85	60,005			
Australia	11,340	3,371,936	2,725	848,851			
Belgium	2	2,137	****	****			
Brazil	669	409,298	5	2,740			
British Africa	4,371	1,768,057	3,518	1,306,663			
British Guiana	153	73,572	35	13,886			
British India	7,781	3,256,497	7,128	2,562,080			
British West Indies, Other	114	51,734	30	11,219			
Canary Islands	52	26,840	24	8,592			
Ceylon	755	333,196	347	127,734			
Chile	1,709	723,327	1,111	435,163			
China	230	101,816	76	27,916			
Colombia	265	163,084	211	98,965			
Cuba	25	29,959					
Denmark	53	24,211					
Egypt	795	342,449	728	268,415			
Finland	1	974		****			
Germany	32	37,993					
Haiti	95	41,298	73	25,781			
Jamaica	499	280,065	310	114,867			
Japan	50	47,957		111,001			
Mexico	20	27,030		****			
Netherlands	43	25,545		****			
Neth, E. Indies	3.089	1,262,271	989	389,911			
Neth. W. Indies	32	15,404	54	19,375			
Newfoundland	55	24,440	19	6,635			
New Zealand	5.521	2,819,735	716	260,340			
	330	178,379		200,030			
Norway			144	53,204			
Portuguese Africa	70	32,327	144				
Rumania	801 26	331,746	238	86,478			
Siam		11,934	204	87,117			
Spain	7	5,242	60	34,290			
Straits Settlements	989	387,472	240	95,461			
Sweden	5	5,674	****	00.000			
Trinidad and Tobago	331	167,729	160	62,229			
United Kingdom	7,203	4,947,112	98	24,840			
United States	187	72,252	6	6,107			
Uruguay	264	139,416	46	20,338			
Venezuela	412	178,127	1,021	377,213			
Yugoslavia	18	13,787	6	2,007			
Other countries	3,972	1,893,735	3,238	1,209,342			
Totals	55,732	\$25,224,014	23,656	\$8,652,301			

Aews



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VOLUME 60

Philadelphia, Saturday, February 23, 1929

NUMBER 8

High Production Proceeds With Car Sales Favorable

PHILADELPHIA, Feb. 23-With retail sales continuing favorably throughout the country in general, and with impetus having been given, particularly in the Eastern sections, by a recent mild spell of weather up through the early part of the week, factories continue to push production to an extent which portends the largest output for any February in the history of the industry.

The monthly report on industrial employment just issued by the Department of Labor for January indicates that not only automobile factories but also aircraft, accessory and tire manufacturing plants have stepped up production to a point requiring overtime shifts.

Despite the heavy increase in production, no abnormal expansion in stocks of new cars has been reported, the increase in retail sales having been great enough apparently to preclude any such condition. The used car situation continues varied, many sections reporting lower stocks than a year ago while others report increases in stocks of this

Official Department of Commerce figures fix the total of American and Canadian motor vehicles during the month of January at 423,655 units. This compares with 240,191 in January, 1928. Slight revisions in the official tally of production during the year 1928 establish the total production of cars and trucks at 4,600,532, a slight increase in the previous figure, 599,766 announced by the department.

Findlater Leaves Ford

DETROIT, Feb. 19-John J. Findlater, for several years field superintendent of the Rouge plant of the Ford Motor Co., has resigned. Mr. Findlater has been identified with the open hearth and rolling mills for nearly 18 years, rising to the general superintendency of the entire mechanical portion of the plant. He has announced no plans for the immediate future.

Guernsey to Address A.S.E.

PHILADELPHIA, Feb. 20 - The March meeting of the S.A.E. Pennsylvania Section will be held on the 13th, and will be in charge of Charles O. Guernsey. The subject of discussion for the meeting is High-Speed Diesel

White Will Drive His Own Race Car

WASHINGTON, Feb. 19-Speculation which has been formed regarding the identity of the driver of the American-built "Triplex," which will defend the title for the world's fastest automotive mile at Daytona Beach, was set at rest when J. M. White, Philadelphia manufacturer and owner, announced that he plans to drive the car himself.

This statement was issued by Val Haresnape, of the contest board of the A.A.A., after a conversation with Mr. White, who is shipping the record-holding car to Daytona Beach, where it will defend its own mark of 207.552 m.p.h.

Ralph De Palma and Leon Duray had been mentioned as possible drivers for the car, and White had stated that Duray could have the nomination if he wanted it, but plans already made by the two drivers made it impossible for them to accept. White built the car solely as a sporting venture, and those closely associated with him have long known that he desired to handle it in a record test.

Wico Electric to Erect Branch Plant in France

SPRINGFIELD, MASS., Feb. 20-Wico Electric Co. will erect a branch factory in the outskirts of Paris to take care of its French trade. This step is taken to overcome the handicap of heavy tariff duties on imports into France. Work will be started soon on factory, which will be about the same size as the London establishment, or half as large as the main plant.

William Bradford, factory manager, and Jack Mills, sales manager, respectively, in London, will serve in the same capacity in Paris.

January Production Totals 423,655 Units

1928	Cars	Trucks	Total
Jan	212,351	27,840	240,191
Feb	301,466	34,834	336,300
Mar	387,048	43,735	430,783
Apr	385,394	48,921	434,315
May	405,627	54,098	459,725
June	381,963	43,232	425,195
July	358,914	58,398	417,312
Aug	424,867	67,676	492,543
Sept	375,444	61,042	436,486
Oct	352,992	62,640	415,632
Nov	225,408	43,294	268,702
Dec	212,527	30,682	243,209
Total 4	1,024,001	576,531	4,600,532
Jan. '29	367,781	55,874	423,655

Hudson Employing 24,000

DETROIT, Feb. 21-Hudson Motor Car Co. has begun operations on its maximum spring schedule which calls for 1500 Essex and 400 Hudson cars daily. A total of 24,000 men are employed at the plant. Cars are being assembled in one shift only, but various departments are working two and three shifts to supply materials. The Hudson body plant is producing 1600 bodies daily. The February production schedule calls for 37,000 cars.

Nash Promotes Travers

KENOSHA, WIS., Feb. 21—C. H. Bliss, sales manager, Nash Motors Co., announced today that E. J. Travers, formerly advertising manager, has been made director of advertising and assistant sales manager. Mr. Travers has been with Nash practically since the company's inception. He is succeeded as advertising manager by F. R. Babcock, for 10 years an executive of Green-Fulton-Cunningham Co. which handles the Nash account.

Army-Navy Standards Set

PHILADELPHIA, Feb. 18—A total of 97 specifications and 94 drawings were considered by delegates at the Fifth Annual Army-Navy Aeronautical Conference held at the Naval Aircraft factory here recently. Among the subjects discussed were powerplants, instruments and aircraft parts. Definite action was taken on most of the specifications considered. The S.A.E. standards for propeller hub and crankshaft end dimensions were endorsed as A.N. standards.

Packard Contracts for \$650,000 Plant

Three-Story Structure to be Used for Making Diesel Plane Engines

DETROIT, Feb. 20—Tests by the Packard Motor Co. of its new Diesel radial air-cooled aviation engine which have been under way for some time, have proved successful and the company has let a contract for the construction of a \$650,000 factory for their production, according to Hugh J. Ferry, treasurer of the company.

The new engine weighs less than 3 lb. per hp. and will effect economies because of its operation on fuel oil instead of gasoline. It will be available at competitive prices, which may be below the \$5,000 average set by Mr.

Ferry.

The new plant will be three stories high, 320 ft. long, and 65 ft. wide, and will be west of the main Packard plant, alongside the inner belt railroad. It will be rushed to completion and will be in production by June or July. Production at first will naturally be on a modest scale, but the factory has an eventual capacity of 500 engines a month. It will employ 600 to 700 men and the skeleton for this organization will be recruited from Packard's research and experimental divisions. Besides the Diesel plant Packard is also constructing a new \$700,000 stamping plant for the automobile division. Stories which have been current recently that Packard will manufacture airplanes were denied by Mr. Ferry.

AC Spark Plug Expands Plant to 65,000 Sq. Ft.

FLINT, MICH., Feb. 18—The twostory addition to building No. 2 of the main plant of the AC Spark Plug Co. will add 5000 sq. ft. of floor space, according to llarlow H. Curtice, vicepresident and assistant general manager of the company, and will bring the total increase in the new construction at the factory during the past few months to 65,000 sq. ft., or about an additional half acre of manufacturing floor space.

The additions consist of a new and enlarged ceramic laboratory building at the rear of the main plant; 20,000 sq. ft. addition, which doubles the die casting plant capacity; 6000 sq. ft. for a new heat treat building, besides sev-

eral loading docks, etc.

Budd Earnings Explained

PHILADELPHIA, Feb. 20—Net earnings of the Budd Wheel Co. for 1928, after depreciation, are reported as \$227,499. Net earnings for the month of January, 1929, were \$238,700. This figure exceeds earnings for the entire year previous partly because of expenditures in developing the manufacture of brakes and partly because

of a temporary setback due in some measure to patent litigations against the company's customers and against the company. The report to stockholders, however, says that such matters have been disposed of satisfactorily, that no further interference with earnings is to be expected and that the company is now experiencing the most profitable year in its history. Earnings of the Edward G. Budd Mfg. Co. for 1928, after depreciation, were \$1,014,730.

Limit on Abrasives Fixed by Industry

WASHINGTON, Feb. 23—Instead of 8000 varieties of coated abrasive products, spot stocks will now be limited to 1976, corresponding to an elimination of 75.3 per cent, the Department of Commerce announces through its Division of Simplified Practice. According to the department the printed government pahphlet is now available for purchase, through the superintendent of documents, Government Printing

Office, Washington, D. C.

For years the quantity of sizes and varieties of coated abrasive products has been increasing at a rapid rate. Many thousands of varieties have been stocked and catalogued by the industry when actually only a certain portion of them have attained a satisfactory turnover. The estimated annual output of the industry amounts to about \$16,000,000. Over-diversification in manufacture led to the development of Simplified Practice Recommendation No. 89, Coated Abrasive Products, and industry fixed Jan. 1, 1929, for absorption of the obsolete varieties.

The printed booklet on this simplification, which may be secured from the Government for a nominal charge, discloses that more than 600 individual concerns scattered over an area of 44 states have accepted the program.

Gets Order for Camshafts

DETROIT, Feb. 21—The Muskegon Motor Specialties Co., manufacturers of camshafts, announces a contract to supply a minimum of 5000 camshafts for the Oldsmobile Eight in three months. According to Fred L. Flanders, chairman of the board and general manager, this is only an initial order and it is estimated the ultimate production of this shaft will reach a peak of 300 a day for the year.

Federal to Pay Dividends

DETROIT, Feb. 19—The Federal Screw Co. of Detroit, with which the Michigan Screw Co. of Lansing, recently merged, will pay two cash dividends. A regular cash quarterly dividend of 75 cents has been declared on Federal to be payable March 1, to stock of record Feb. 20. An additional cash dividend of 25 cents will be paid April 1 to stock of record March 20. Federal will go on a \$3 a year dividend basis.

Business in Brief

Written by the Guaranty Trust Co., New York, exclusively for AUTOMOTIVE INDUSTRIES.

NEW YORK, Feb. 21—Business and industry on the whole continue on a higher level of activity than a year ago. During the last week, wholesale and jobbing trade has shown some improvement; but the retail trade, if there has been any change, is perhaps slightly below recent levels.

MANUFACTURING

Manufacturing operations during January, as indicated by the consumption of electrical energy, were 4.1 per cent above those in December, 1928, and 11.9 per cent above those in January, 1928. The increase reflects an exceptionally high rate of activity in January in the automotive industries and in the rolling mills and steel plants.

FREIGHT CAR LOADINGS

Car loadings for the week ended Feb. 2 totaled 946,892 cars, which represents an increase of 20,630 cars over those in the corresponding week in 1928, but a decrease of 18,-772 cars under those in the corresponding week in 1927.

FISHER'S INDEX

Professor Fisher's index of wholesale commodity prices for the week ended Feb. 16 stood at 97.6, as compared with 97.1 the week before and 97.7 two weeks before.

BANK DEBITS

Bank debits to individual accounts outside of New York City for the week ended Feb. 13 were 8 per cent above those in the similar week in 1928.

STOCK MARKET

The stock market last week was nervous and very irregular as a result of the rise in the rediscount rate of the Bank of England and the uncertainty regarding what action the Federal Reserve Board might take subsequent to its warning that call loans had reached dangerous proportions. Although the market was highly irregular during the week, the trend was decidedly toward lower levels. Brokers' loans in New York City decreased \$101,-000,000 during the week ended Feb.

FEDERAL RESERVE REPORT

The consolidated statement of the Federal Reserve banks for the week ended Feb. 13 indicated a very slight credit expansion. An increase of \$52,300,000 in discounted bills was partially offset by decreases of \$19,-700,000 in holdings of bills bought in the open market and \$22,900,000 in holdings of Government securities. The statement of the Federal Reserve member banks for the week ended Feb. 13 showed an increase of \$50,000,000 in borrowings from the Federal Reserve banks and decreases of \$31,000,000 in investments and \$22,000,000 in loans.

Men of the Industry and What They Are Doing

Ohio Council, N.A.D.A., Names Coen as Director

The board of governors of the Ohio Council, National Automobile Dealers' Association, named Harry B. Coen, head of the Coen-Nash Co., central Ohio distributor for the Nash, as managing director at its recent meeting at Columbus. Mr. Coen succeeds Gaylord R. Ford, who has been acting manager of the council since the resignation of A. C. Faeh, now assistant general manager of the national association.

Those who attended the meeting included: G. A. Vane, Chicago, general manager, and A. C. Faeh, Chicago, assistant general manager of the National Association; J. W. Tarbill, Cincinnati, president of the council; Howard L. Pfau, Youngstown; J. Grant Hyde, Akron; E. S. Tolles, Springfield; John F. Taylor, Portsmouth; Harry T. Gardner, Cincinnati; Herbert Buckman, Cleveland; M. E. McCaskey, Youngstown; F. X. Schaut, Cleveland, and J. Hoyt Cummings, Columbus.

Vavon Returns to Paris

Paul Vavon, chief engineer of the Societe Anonyme Andre Citroen, who had been in this country since the New York show, returned recently to Paris on the French liner Paris. Following the show, M. Vavon went to Detroit, where he established a new technical bureau for his company.

Boynton Joins Winningham

Walter Boynton, automotive writer, has joined the staff of C. C. Winningham, Inc., advertising and merchandising counsel, and will be engaged in creative work on various accounts, announces C. C. Winningham, president.

Jordan Appoints Buckner

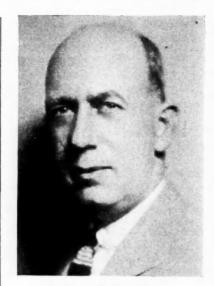
Jordan Motor Car Co. has announced the appointment of Harvey R. Buckner as works manager. He was formerly division superintendent for Willys-Over-

Case Succeeds Hutchins

W. J. Case has been appointed director of districts of Dodge Brothers Corp., according to C. W. Matheson, general sales manager. Mr. Case was previously director of distributors, and succeeds J. W. Hutchins, who recently was promoted to assistant general sales manager of the Plymouth Motors Corp.

Mitchell on Sick Leave

W. Ledyard Mitchell, vice-president and general manager in charge of operations of Chrysler Motors, has been granted a temporary leave of absence to recover from an appendicitis operation. During his absence K. T. Keller,



D. J. Willoughby
Whose appointment as general manager, Pierce-Arrow Motor Car Co.,
was announced in Automotive Industries last week

vice-president and general manager of Dodge Brothers Corp., is acting general manager of all Chrysler divisions.

Biggers Leaves Dodge

Robert L. Biggers has resigned as director of sales promotion and development, Dodge Brothers Corp., to become vice-president of Blackett-Sample & Hummert, Inc., advertisers, Chicago, Ill.

Fick Heads Distributorship

Glenn A. Fick, general manager of the newly organized Franklin-Iowa Motors Co., Des Moines, has taken over state distribution for Franklin. The new company succeeds the former Franklin-Adamson company, with which it has no connection.

Dunlap Durant Distributor

Harry Dunlap has sold the Dunlap Motor Co., Ames, Iowa, to G. L. Wilson and has moved to Waterloo as factory distributor for Durant, supervising sales and agencies in 30 counties. Mr. Wilson, former manager of the Rude Auto Co., Marshalltown, is operating his new property as the Wilson Motor Co.

Stevens Assumes New Post

Willard H. Stevens has returned to Boston from Chicago with the position of New England district representative for Durant Motors, Inc.

Fay Sails for Hawaii

Charles E. Fay, Boston distributor for Chrysler, has sailed for a two months' trip to Honolulu and Tahiti via the Panama Canal.

R. J. Beatty is Chairman of United Cleaner Board

The new officers recently elected by the United Air Cleaner Co., Chicago, are: R. J. Beatty, chairman of the board; J. T. Beatty, president-treasurer; F. F. Paul, vice-president; J. C. Hockery, assistant treasurer. The directors include: Messrs. Beatty, Thomas Sullivan. Mr. Hockery and Mr. Paul.

Sullivan, Mr. Hockery and Mr. Paul.
R. J. Beatty recently acquired the interest in the company previously owned by F. R. Nichols of Kansas City.
United Air Cleaner, which has a large automotive business, has designed a new air cleaner for Model A Ford. The company has made extensive plans for increased activities.

Muir in New Executive Post

The Taylor-Winfield Corp., Warren, Ohio, manufacturers of Taylor-Winfield electric welders, announces the appointment of James A. Muir as assistant to the president. Mr. Muir, who has been connected with the welding machine industry for more than 25 years, was one of the originators of the old Toledo Electric Welder Co., which was absorbed by the Thomson Electric Welding Co., and until recently was sales engineer for the latter concern.

Lowenstein on Voyage

Arthur Lowenstein, chairman of the board of Motor Ramp Garages of America, has sailed for a vacation in South America. Before leaving he indicated that his company is making a survey of New York with a view to building garages to solve the parking problem.

Taylor Made Sales Manager

Lincoln Electric Co., Cleveland, manufacturer of Stable-Arc welders and Line-Weld motors, has announced the appointment of C. M. Taylor as sales manager. Mr. Taylor has been with the company since 1916, with the exception of two years he spent in the army. He became factory manager in 1923 and was made a vice-president in 1925.

Barryman Reo Distributor

J. R. Barryman, for the last 14 years wholesale sales manager of the Gomery-Schwartz Motor Co., Hudson-Essex distributor in Philadelphia, has been appointed Reo distributor at Kansas City. He will operate as the Barryman Reo Motor Co., Inc.

Leonard Sales Manager

Charles H. Leonard has become sales manager for the Boston Whippet-Knight Corp. He has handled the Willys-Overland, Kissel and McFarlan cars on the Pacific Coast.

Winchester Speaks on Motor Vehicles

Urges Closer Standardizing of Dimensions at Meeting of S.A.E.

PHILADELPHIA, Feb. 20—At the February meeting of the Pennsylvania Section, Society of Automotive Engineers, held here last night, J. F. Winchester, superintendent of motor equipment, Standard Oil Co. of New Jersey, spoke on "Engineering Features of Motor Vehicles Which Affect Their Operating Costs." Mr. Winchester has control of a fleet of between 3200 and 3300 vehicles operating in 11 states and presented considerable information gathered from his experience.

The speaker remarked that, despite vast improvements in highways during the past decade, trucks of his company operating in the oil fields of Texas and Oklahoma still have to contend with severe road conditions. He illustrated his talk with a number of slides showing great distortion of frame when traveling over uneven ground. The desirability of standardizing certain dimensions, such as the width of the frame, the horizontal distance from the rear of the cab to the center of the rear axle, overhang of the frame over the rear axle, tread at the rear, etc., was pointed out by Mr. Winchester as important in enabling the transfer of a truck body from one chassis to another, as is often necessary in operating a large fleet.

The body allowances standardized by the N.A.C.C. are entirely too low and should be revised, said Mr. Winchester. He mentioned a number of examples in which the actual weights of bodies were twice as much as the standard allowance.

In the discussion B. B. Bachman called attention to the opportunities for young engineers in devoting their talents to the efficient servicing of vehicles. He also pointed out the increased speeds of trucks and the attendant need for developing engines capable of withstanding the extra strain.

Von Hambach to Promote New Steel for Carpenter

CHICAGO, Feb. 18—E. Von Hambach, formerly director of sales and engineering for the Boyle Valve Co., and a member of the A.A.A. technical committee which recently drafted the 1930 Indianapolis racing rules, has joined the Carpenter Steel Co. of Reading, Pa., as sales promotional engineer in charge of the automotive division.

Mr. Von Hambach's new work will April 1 to stockly be in connection with the promotion of a new stainless steel for automotive uses. The product is described by the company as a rustless, corrosion-resisting steel, the basic alloy of which is chromium, with other constituents and the stockly approved the company as a rustless, corrosion-resisting steel, the basic alloy of which is chromium, with other constituents and the stockly approved the company as a rustless, corrosion-resisting steel, the basic alloy of which is chromium, with other constituents are steel.

such as are found in straight carbon, electric furnace steel of high quality. The new steel is presented in five grades, all of which contain a patented element which makes the new steel practically as machinable as ordinary screw stock, according to the company's engineers.

Merger of \$12,000,000 Links Greyhound-Yelloway

CHICAGO, Feb. 18—Consolidation of the Greyhound lines, operated by the Motor Transportation Corp. and the Yelloway Lines, operated by the American Motor Transportation Co., under the name of the American Motor Transit Corp., has been announced by O. S. Caesar and W. E. Travis, presidents of the merged companies.

This consolidation, representing an investment of more than \$12,000,000, forms the largest long-distance bus transportation system in the country. The Greyhound Lines operate in and between the middle western, eastern and southern sections of the country. The Yelloway Lines serve the extreme western and northwestern territories in addition to maintaining service from Los Angeles to New York. Approximately 3,400,000 passengers were carried by the two lines in 1928.

Russell Canadian Plant to be Opened March 15

ST. JOHN'S, QUEBEC, Feb. 19—F. J. Daly, Canadian service manager for the Russell Mfg. Co. of Middletown, Conn., announces that the plant here is rapidly nearing completion and will start production of brake linings March 15 with a personnel of 20 employees.

"The parent plant in New England started in 1830, from a small mill powered by a water wheel and employing 20 hands," said Mr. Daly. "Today it occupies 692,000 sq. ft. and employs 1300 hands regularly. The sales average \$8,500,000 a year. We expect to grow in the same steady manner."

Gardner Adds to Sales Force

ST. LOUIS, Feb. 19—Since the close of the New York automobile show 25 new distributors and dealers have joined the Gardner forces, according to Russell E. Gardner, Jr., president of the company. These merchandisers are located in 25 cities in 14 states of the United States. Six, located respectively in Detroit, New Orleans, Decatur, Ill., Charlotte, Norfolk, Va., and Newark, N. J., are the most recent additions.

Goodyear Declares Dividend

Goodyear Tire & Rubber Co. has declared a regular quarterly dividend of \$1.75 on first preferred stock payable April 1 to stockholders of record March 1. The directors of the company recently approved an issue of additional common at \$8 per share at the rate of three for each 10 shares of record Feb. 21, with warrants for subscription good until March 16.

Financial Notes

Atlas Imperial Diesel Engine Co. has declared a regular quarterly dividend of 37½ cents on Class A and Class B stocks, respectively, and an extra dividend of 12½ cents on each of these stocks, all payable March 1 to holders of record Feb. 20. Stockholders have been informed that the company proposes to advance the annual dividend rate from \$1.50 to \$2 at the next meeting.

Foote Brothers Gear & Michine Co. announces that last year established a new high record. The annual report for the year ended Dec. 31, 1928, shows a net income, after all charges, of \$308,997, equal after preferred dividends to \$2.14 a share on the common stock as compared with \$252,844, or \$1.45 a share on the common stock in the preceding year.

Niles-Bement-Pond Co. will distribute on March 6 to stockholders of record Feb. 18, two and one-eighth shares of common stock of United Aircraft & Transport Corp. for each share of common in Niles-Bement-Pond. After this distribution, it is reported, the company will still have in its treasury about 20,000 shares of United Aircraft & Transport common.

E. I. du Pont de Nemours & Co. has declared an initial quarterly dividend of \$1 on the new \$20 par common, payable March 15 to stockholders of record March 1. This places the stock on a \$4 annual basis, equivalent to \$14 on the old no par stock, recently split 3½ for 1, which was on a regular \$10 annual basis.

Fageol Motors Co. reports profit available for common stock, after payment of all charges, including preferred dividends, as \$143,710, or 72 cents a share. This compares with \$94,015, or 47 cents a share, in 1927. Gross sales were \$3,612,563 as against \$2,365,249.

Automotive Fan & Bearing Co. reports net earnings for the year ended Dec. 31, 1928, as \$115,129.60. Current assets at the close of the year totaled \$117,107.52 against current liabilities of \$46,208.60. Total assets were \$193,727.29.

Stewart-Warner Speedometer Corp. reports net profit for 1928, after all charges, as \$7,752,532. This is equivalent to \$12.92 a share on common stock and compares with earnings of \$5,210,053, or \$8.67 a share, in 1927.

Gardner Motor Co. reports net profit for the nine months ended Sept. 30, 1928, as \$50,389. This is equivalent to 80 cents a share on its \$5 par value capital stock. Net sales for the period were \$4,777,625.

Yellow Taxi Corp. of New York and subsidiaries report net profit for 1928, after all charges, as \$132,509. This is equivalent to \$1.06 a share on capital stock and compares with net loss for 1927 of \$445,382.

Alloy Steel Spring & Axle Co. reports current assets at the close of 1928 as \$288,-409 and current liabilities of \$52,146. Total assets were \$489,937. Surplus (undivided profits) totaled \$184,603.

Factories Too Generous With Credit Abroad, Shaterian Tells Overseas Automobile Club

NEW YORK, Feb. 18—Too long credit terms are usually granted by American manufacturers selling to the export market, W. S. Shaterian, manager of the foreign department of the National City Bank, told members of the Overseas Automotive Club at its regular monthly meeting. Mr. Shaterian raised the question as to why manufacturers should extend terms of 120 to 150 days to dealers who will turn the goods for cash within 30 days.

He also discussed the proper usage of certain forms of credit paper as used in the export market. Where long terms are granted, Mr. Shaterian indicated it is only just that the buyer be charged interest on the money so that the shipper would not have to suffer loss through the protracted tying up of his capital.

J. W. Arrieta, Latin American repre-

sentative of Black & Decker Mfg. Co., who has just spent a year and a half in Central and South America, told the export managers at the club that, while American goods today dominate in this market, it is necessary for Americans to cultivate more friendly feelings among these people in order to maintain this dominance. Service and goodwill, he pointed out, are the two requisites for maintaining this market. The United States today has the good will of Brazil and Peru but other nations in Central and South America do not have the same friendly feeling, he said. Argentine and Colombia, in particular, are markedly lacking in confidence in the United States. There is no European competition in the automotive field territory, but American competition is extremely bitter, resulting frequently in price cutting.

the property between Champlain St. and the Wheeling & Lake Erie Railroad, between its plant and the Burt Foundry, which it controls.

Stutz and Bellanca Join in New Aircraft Company

NEW YORK, Feb. 18—Formation of the Stutz-Bellanca Airplane Corp., for the manufacture of airplanes and engines in factories at Bridgeport, Conn., and Orlando, Fla., was announced today. Harry C. Stutz is to be president, and Frank Bellanca, brother of Giuppe M. Bellanca, secretary-treasurer of the company, which will be incorporated in Delaware.

The plant of the Commercial Aircraft Co. at Bridgeport, of which Bellanca is vice-president, will be taken over by the new company for the immediate fabrication of planes, and when an assembly plant has been built at Orlando the Bridgeport unit will be used for the manufacture of engines.

Form Plane Finance Firm

NEW YORK, Feb. 19—Formation of Inter-Allied Aeronautics, Inc., a \$5,000,000 holding and finance company to finance aircraft manufacturing, purchase airplane equipment and assist in the construction of airports, was announced today. The company, which is headed by Col. George R. Shanton, former chief executive of the Law and Order Bureau of Insular Affairs in Cuba, the Canal Zone and Porto Rico, is to be financed through an offering of 200,000 shares of common stock.

Auto-Lite Adds Property

TOLEDO, Feb. 18—Electric Auto-Lite Co. has purchased 28 residence properties and part of the plant of the Buckeye Brewing Co., giving it a strip of ground 800 ft. by 350 ft. in depth just north of its present main plant. Consideration was \$250,000. President C. O. Miniger said no immediate expansion is planned but that the company is looking toward the future.

This acquisition gives Auto-Lite all

Issue of 60,000 Shares Made by Sterling Truck

MILWAUKEE, Feb. 18—For the purpose of retiring \$470,150 of 8 per cent preferred stock, and to meet mortgage and land contract obligations as well as to increase its working capital, Sterling Motor Truck Co. has made a new issue of 60,000 shares of convertible preferred stock at \$30 per share. The new stock is quoted on the Chicago Stock Exchange.

The capital stock of the company consists of 60,000 shares of preferred valued at \$1,800,000 and 120,000 shares of no par common of which 60,000 shares are outstanding, the rest being reserved for conversion of preferred. Sterling assets at the close of 1928 were listed at \$4,320,000. The sales last year totaled \$7,128,000 while production was 1374 trucks. Net profits for 1928 have been reported as \$325,547.

Perkins Machine Expanding

SPRINGFIELD, MASS., Feb. 19—Perkins Machine & Gear Co., manufacturer of gears for automotive use and of machines for cutting gears, reports unfilled orders amounting to \$300,000. Three operating shifts have been instituted and additional factory equipment is being installed.

Toledo Show Draws 40,000

TOLEDO, Feb. 18—The twenty-first annual automobile show here, which drew an attendance totaling more than 40,000, was by far the best selling show Toledo dealers have ever held, according to T. J. Cooper, manager. Warren E. Griffith, president of the National Automobile Dealers' Association, was

present at almost every session. A. H. Short was president of the show organization.

Pierce-Arrow Increases Number of Distributors

BUFFALO, Feb. 19—Additional appointments of new distributors and dealers in a number of important cities during the past two weeks have brought Pierce-Arrow's distributing organization virtually up to full strength, according to officials of the company. Negotiations are under way in centers which do not have as yet adequate representation, it is explained.

Among the most prominent of the new distributors are the following:

Richard R. Kuehn Co., South Bend, Ind.; Yarbrough Motor Co., Atlanta, Ga.; The F. L. Mills-Arrow Co., Bridgeport, Conn.; C. W. Upchurch & Co., Charlotte, N. C.; Le Febvre Motors, Inc., New Orleans, La.; National Motor Car Co., Altoona, Pa.; Thos. F. Daquila, Beaver Falls, Pa.; Orth Motor Co., Canton, Ohio; San Juan Garage Co., Orlando, Fla.; Norville Motor Co., Salt Lake City, Utah; Arthur R. Lindburg, Inc., Fresno, Cal.; Broadway Motor Co., Nashville, Tenn.; Automobile Sales Co., Memphis, Tenn.; Fluckiger Motor Co., Waterloo, Iowa; Cherokee Motor Co., Knoxville, Tenn.; J. Arthur Applegate, Perth Amboy, N. J.; Bob C. Smalley, St. Petersburg, Fla.; Central Motor Sales Co., Inc., Worcester, Mass.; Bent Motor Co., Windber, Pa.; Willis-Kingsley, Ltd., Vancouver, B. C.

Stutz Expands Sales Force

INDIANAPOLIS, Feb. 18—Two new distributors, five dealers and one associate dealer are recent acquisitions to the sales force of the Stutz Motor Car Co. of America, Inc., according to E. R. Parker, general sales manager. The distributors are Rivera y Cia., at Cartoga, Costa Rica, and the Stutz-Blackhawk Corp. of Tulsa, Okla., headed by C. L. Richards. The new dealers are scattered throughout the East and Middle West.

Durant Schedules 4000

DETROIT, Feb. 19—Durant Motors Inc., has a February production schedule for approximately 4000 cars and trucks at the Lansing factory. Production is running about 75 cars a day but this output is expected to be stepped-up shortly. Approximately 1000 men are now on the payrolls. The company has announced an increase in the price of its Model 40 coach from \$595 to \$625.

Brown Instrument Moves

PHILADELPHIA, Feb. 16—Brown Instrument Co. has announced the removal of its Buffalo office from 624 Ellicott Sq. to 402 Marine Trust Bldg., where increased facilities are provided. The company also has announced that O. B. Wilson, who has been with the organization for more than five years, has been placed in charge of the Cleveland office, 819 Hippodrome Bldg.

Inventories High in Balloon Tires

Rubber Association's Report Shows Decreased Stocks in High Pressure Class

NEW YORK, Feb. 19—Greatly increased inventories in balloon tire casings and inner tubes at the close of 1928, as compared with the close of 1927, are revealed in the statistical bulletin of the Rubber Association of America. These increases are shown after increased production in such products during the year and despite increased shipments.

In the case of high pressure cord casings and inner tubes the contrary is reflected, inventories at the close of the year being lower, as were both production and shipments during 1928. Com-

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parative	figures	follow:	

		Inven- tory	Produc- tion	Ship- ments
Dec.	1928	6,594,978	2,761,109	2,371,732
Nov.	1928	6,192,556	2,875,529	2,430,203
Dec.	1927	3,844,039	1,824,668	1,710,893
Year	1928		38,878,218	35,931,982
Year	1927	******	26,037,452	25,111,903

Balloon Inner Tubes

Dec.	1928	7,049,748	2,453,744	2,312,203
Nov.	1928	6,867,159	2,268,410	2,238,347
Dec.	1927	4,523,047	1,617,875	1,734,026
Year	1928		36,878,990	34,095,223
Year	1927		25,718,529	25,143,821

High Pressure Cord Casings

Dec.	1928	3,580,576	1,434,529	1,061,132
Nov.	1928	3,197,060	1,664,024	1,305,186
Dec.	1927	3,649,536	1,487,624	1,368,158
Year	1928		19,302,218	19,351,380
Year	1927		21,527,278	21,741,962

High Pressure Inner Tubes

Dec.	1928	5,037,716	1,434,227	1,331,607
Nov.	1928	4,952,973	1,929,320	1,512,810
Dec.	1927	5,745,949	2,108,924	1,800,026
Year	1928		23,255,891	23,749,966
Year	1927		27,398,535	29,528,108

Auburn Schedules 12,000 for March, April and May

CHICAGO, Feb. 20—The production schedule of the Auburn Automobile Co. for the second quarter of the company's fiscal year, including March, April and May, has been set at 12,000 cars to supply the demand resulting from the addition of approximately 200 new dealers to the sales organization, E. L. Cord, president of Auburn, stated yesterday.

The original production schedule set for March at the time of the New York Automobile Show was 3000 cars. This was increased to 3500 units at the Chicago Show and has now been raised to 4000. A production of 12,000 cars for the second quarter of the fiscal year would compare with actual shipments of 13,700 for the entire fiscal year ended with November, 1928. The production schedule for the current month calls for 2900 cars which is 600 more than the company's highest production for any month heretofore. Actual ship-



New Sales Head

Nelson A. Beardsley, recently appointed General Sales Manager of the
Willys-Knight division, Willys-Overland, Inc.

ments during the first 11 days of February were 946 cars which compares with 604 cars in the whole of February, 1928.

A.S.M.E. Decides Essentials of Oil

NEW YORK, Feb. 16—A special research committee on Diesel fuel oil specifications, working under the auspices of the American Society of Mechanical Engineers, held its second meeting here this week. Considerable progress has been made in the standardization of specifications by the committee and it is felt that the next meeting, scheduled for April 26, will result in some definite standards.

This committee has obtained the cooperation of three groups vitally interested in this problem, namely, the Diesel engine manufacturers, larger operators and the fuel oil supply companies.

The main problem which the committee has settled to its satisfaction is the determination of what factors should be considered essential and what properties of the oil will be considered as informative. Viscosity, sulphur content and moisture are three of the characteristics which are considered as essential in grading an oil for purchase.

William H. Murphy

DETROIT, Feb. 16—William Herbert Murphy, aged 73 years, prominently identified with the early development of the automotive industry and one of Detroit's wealthiest capitalists, died Feb. 5, of heart disease. Mr. Murphy, who was born at Bangor, Me., was one of the founders of the Lincoln Motors Co., which was acquired by the Ford Motor Co. several years ago. Associated with him in forming Lincoln were Joseph Boyer, John Trix and Henry M. and Wilfred C. Leland.

N.S.P.A. Convention Will be in Detroit

Decision on 1929 Event Made After Considering Chicago and Cleveland

DETROIT, Feb. 20—After an exhaustive survey of conditions in Chicago, Detroit and Cleveland, the board of directors of the National Standard Parts Association voted unanimously to hold the 1929 N.S.P.A. Show and Convention here during the week of Nov. 11. Arrangements have been made for the Detroit Convention Hall, which will provide 100,000 sq. ft. of floor space and will amply accommodate the 7000 delegates and visitors expected.

The convention heretofore has been held either in Cleveland or Chicago. At the event in Cleveland last year the member body of the association voted to hold the 1929 convention in Chicago, providing suitable facilities could be obtained. The committee which made the decision in favor of Detroit was composed of two Chicago members, Ray A. Kiken, vice-president, and C. M. Burgess, director, in addition to E. P. Chalfant, executive vice-president.

There were 277 exhibitors at the Cleveland show last fall, which occupied two entire floors in the Cleveland Auditorium. The 1929 show committee, which is to hold a meeting here soon, includes: C. C. Secrist, Victor Mfg. & Gasket Co., chairman; J. F. Strand, Lake Erie Metal Products Co.; J. N. Kirk, World Bestos Corp.; C. J. Swain, Sr., Philadelphia; Harry Israel, Dayton; W. E. Reed, Evanston, Ill., and R. Macfee, secretary of the association.

Durant Officers to Have Headquarters in Detroit

DETROIT, Feb. 20—The new executive offices of Durant Motors, Inc., will be in the Maccabees Building, Woodward Ave. and Putnam Pl., Detroit, it is announced. The executives of the company who will occupy the offices here include A. I. Philp, chairman of the board; F. J. Haynes, president; J. A. Nichols, Jr., secretary and treasurer; Wallace Zweiner, assistant secretary and treasurer, and R. T. Hodgkins, general sales manager.

The export and truck divisions of the company as well as the advertising department also will have offices in Detroit, while the purchase and engineering departments will be located in the main plant at Lansing, according to present plans.

Germany Adding Airports

WASHINGTON, Feb. 21—Germany has 86 airports, 25 of which are completely equipped, according to a report received by the Department of Commerce. Seven more ports are under construction, the report stated.

Mills Raise Price of Hot-Rolled Bars

Advance of \$1 Per Ton General After Two Concerns Take Lead

NEW YORK, Feb. 21-A \$1 per ton advance in the price of hot-rolled steel bars, which became general following announcement by two of the leading concerns' subsidiaries of its taking effect on Monday, came as a surprise to most consumers. The market had been rather easy at \$1.90 that many single carload buyers were able to cover their wants at that price. One theory advanced in explanation of the rise to \$1.95 is that heavy tonnage buyers of late have not enjoyed a commensurate advantage over smaller consumers, and that while the \$1.95 price will apply to the general run of business, it is probable that those ordering good-sized tonnages for rolling at one time will come in for preferential treatment to the extent of \$1 a ton.

Whether this will be so, remains to be seen. Shapes and plates, which move with bars, were also marked up. Cold-finished steel bars are likely to come in for upward price revision, finishing mills having complained right along of the inadequate spread between prices obtained for their product and the cost of their semi-finished material. Rumor has it that a new list of extras on cold-rolled strip-steel will become effective for second quarter, so as to make up by means of size and gage extras, and without lifting base prices, for the recent \$2 per ton advance in hot-rolled strip.

Advances in black and blue annealed sheets continue so far in the conversational stage. Quite a few sheet-rollers appear to be taking a "let well enough alone" attitude, but if semi-finished steel prices should be marked up, as is forecast in some quarters, a more pronounced effort to lift sheet prices might set in. Producers are anxious to avoid sales resistance as the result of price advances.

Pig Iron—Melters continue to take on good-sized tonnages and automotive foundries lead the procession of those calling for shipments. The market continues firm and unchanged in price.

Aluminum—The market continues stationary. Demand for both virgin and remelted metal is good with routine conditions characterizing the situation.

Copper—Tension is abating somewhat. It seems as though producers were well satisfied with the price goal attained, and were now ready to apply the brakes more energetically to keep the market within bounds. Demand for copper and brass products from automotive consumers is brisk.

Tin—Consumers are buying on breaks in the market. Price changes appear to result largely from the speculative activities of the leading traders in the London market.

Lead—While the London market continues to be the major influence on prices, consuming demand here is decidedly broad

French Exports Fall While Imports Grow

PARIS, Feb. 16 - French automobile exports dwindled 15.1 per cent during the year 1928, while imports increased 83.4 per cent, by reason of greater American activity. During the year the total number of passenger cars exported by France was 39,201, which together with 4906 trucks and tractors, gave a total of 848,224 metric tons, having a value of 1,518,473,000 francs. For the first time the United States headed the list of imports, with 4157 passenger cars and 170 trucks.

and imparts an undertone of strength to the market.

Zinc—Ore prices in the Joplin market have been boosted \$1 per ton, and the market for the metal rules strong. Weather conditions in the Joplin district have had an untoward effect on mine output.

Allen Electric Prepares for Big Output of Parts

KALAMAZOO, MICH., Feb. 16—Allen Electric & Equipment Co. announces that since its purchase of the automotive division of the Forest Electric Co. of Newark, N. J., few changes have been made in the sales organization of the recently acquired unit. Lynn F. Woolman, formerly sales manager for Forest, is sales promotion manager for Allen. The Forest battery equipment products are to be manufactured at Kalamazoo.

Approximately 14 months ago the Allen interests acquired the General Equipment Corp. here, effecting a complete reorganization and changing to the present name. Since that time the company has been progressing substantially, and with its recent acquisition the Allen company announces that it stands foremost in the electric shop equipment field. G. H. Allen, president of the company, formerly headed the Allen Electric Mfg. Co. of Detroit, before it became merged with the General Equipment Corp.

Studebaker Host to 400

CHICAGO, Feb. 18—Four hundred members of the Chicago Chapter, American Institute of Banking, will be guests of the Studebaker Corp. on Washington's birthday, it was announced at the factory today. A fleet of 60 Studebaker cars will conduct the party to the company's proving ground, where guides will describe the tests.

Gardner Brougham \$2,510

The price of the new Gardner sport brougham, announced in *Automotive Industries* last week is \$2,510 f.o.b. St. Louis, instead of \$2,410 as was indicated.

Employment Grows in Car Industries

Government Survey Reveals January Decreases in Other Manufacturing

WASHINGTON, Feb. 21—While levels of employment and payrolls in manufacturing industries as a whole decreased during January, an increase in both was shown in the automobile and tire industries, according to a survey of such conditions in the United States just completed by the Department of Labor.

Employment in manufacturing industries generally decreased 0.3 per cent in January and payroll totals decreased 3.3 per cent. The bureau's index of employment in the automobile industry for January, 1929, however, was 121.1, as compared with 110 for December and 91.8 for January, 1928. The weighted index of payroll totals for January, 1929, for the automobile industry was 111.4 as against 109.3 for December, and 85.8 for January, 1928, the report shows.

For the tire industry the weighted index of employment was 108.2 for January, 1929, 103.9 for December, and 95.7 for January, 1928. The index for payroll totals for this industry was 103.4 for January, 1929, 103.5 for December, and 95.9 for January, 1929. The monthly average for 1926 was taken as 100.

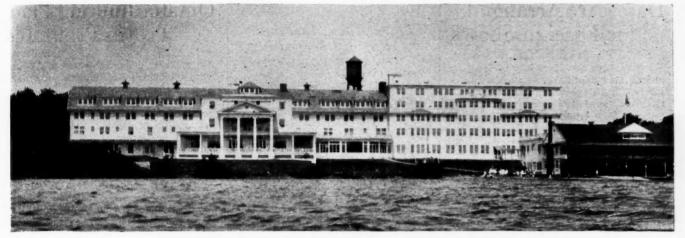
Employment generally decreased 0.6 per cent in January as compared with December and payroll totals decreased 2.9 per cent, according to the bureau's report. Inventory-taking, weather conditions, and reaction from the trade activities of December, make such decreases customary in January, according to the bureau. Automobile and tire industries were among the 21 out of 54 industries reporting more employees in January than in December.

Gates to Build Planes

NEW YORK, Feb. 18—Ivan R. Gates, one time proprietor of the Gates Flying Circus at Teterboro, N. J., and more recently president of the Gates-Day Aircraft Co., has organized the Gates Aircraft Corp. to build training planes. This company is organized under a Delaware charter with a capital of 400,000 shares. Mr. Gates also has organized the Gates Flying Service to operate flying schools and aircraft service stations.

Benjamin L. Sommer

PEORIA, ILL., Feb. 16—Benjamin L. Sommer, aged 49 years, chairman of the board of directors of the Keystone Steel & Wire Co., widely known in the steel industry, died Feb. 8 in his winter home at Coral Gables, Fla., following a sudden attack of heart disease. Mr. Sommer was president of the Mid-State Steel & Wire Co. of Crawfordsville, Ind.



Where the S. A. E. Will Hold Its Summer Meeting

The 1929 Summer Meeting of the Society of Automotive Engineers will be held at Saranac Inn, Upper Saranac Lake, New York, June 25 to 28. Final decision to take the meeting to Saranac Lake came after serious consideration of French Lick Springs, Mackinac Island, and Spring Lake, N. J., as possible sites. Saranac Inn is located in the Adirondack Mountains, 1574 ft. above sea level, about 240 miles due north of New York City and will entertain the S.A.E. summer meeting this year for the first time. Six technical sessions are contemplated for the four days' meeting, while golf and other recreational activities will be an integral part of the program as heretofore

Travelers Visit Oakland to Prepare for Banner Year

DETROIT, Feb. 18—Of the 100 traveling field representatives of Oakland Motor Car Co. attending the convention now in progress at the factory in Pontiac 50 are new men who have been engaged to augment the field force in the selling campaign designed to make 1929 the greatest year in Oakland-Pontiac history. Each of the 25 district offices in the country has one or more of its representatives at the convention, which extends until Feb. 23.

According to W. H. Loudon, of the factory sales department, who has charge of the convention, the object of the meeting is to give every traveler a close insight into factory methods and operations that he may work more intelligently in the field toward improved public service. In addition to addresses by the company executives, the schedule provides for trips through the Oakland-Pontiac plant, the Fisher body plant at Pontiac and the General Motors proving ground. In connection with the convention a series of service schools also was started by R. A. Armstrong, service manager of the Oakland company.

Special Taxes Exceed Cost of Highway Upkeep

NEW YORK, Feb. 18—In a survey of highway tax costs, issued in pamphlet form by the National Automobile Chamber of Commerce, John E. Walker, former special assistant on taxation to the Secretary of the Treasury, presents facts to indicate that special motor vehicle taxes are more than equivalent to all highway maintenance costs. It is also shown that state and local special motor vehicle taxes pay for 35 per cent of the entire highway bill of \$1,500,000,000,000.

Motor trucks are shown to pay twice | Co. He became manager of the Go as much in special taxes per vehicle as | eral Electric Works at Erie in 1912.

do private automobiles, while common carrier buses pay 24 times as much in special taxes as do private cars. Less than 12 cents out of each state and local general tax dollar goes to highways. State authorities expend 47 per cent of the total highway funds while counties expend 53 per cent, according to the survey.

Van Norman Adds Output

SPRINGFIELD, MASS., Feb. 19—Van Norman Machine Tool Co. has increased its production of automotive equipment and has put on night shifts in several departments for handling increased business. Charles E. Van Norman has been elected treasurer to fill the vacancy caused by the death of Frank H. Page, and will continue to fill the office of president. Kenneth B. Page, Henry A. Field and George W. Kyberg have been added to the board of directors.

Prest-O-Lite Adds Plants

NEW YORK, Feb. 19—Prest-O-Lite Co., Inc., has acquired the business of Acetylene Products Co. which operated two acetylene producing plants, one in Phoenix, Ariz., and one in El Paso, Tex. These plants are now being operated as units of the Prest-O-Lite chain and bring the number of Prest-O-Lite plants to a total of 38 scattered throughout the country.

Matthew Griswold

NEW YORK, Feb. 18—Matthew Griswold, works manager of the Erie (Pa.) works of the General Electric Co. until his retirement on Jan. 1 of this year, died at his home in Erie on Feb. 10. Mr. Griswold, who was 62 years old, was a graduate of the Sheffield Scientific School, Yale, and was for a number of years president of the Griswold Mfg. Co. He became manager of the General Electric Works at Erie in 1912.

Estimate Shows Rubber Imports Are Increasing

NEW YORK, Feb. 18—Crude rubber closed last week in a considerably stronger position, according to F. R. Henderson Corp. This strength is attributed to covering on the part of a number of shorts and a trade demand of substantial proportions. Stocks of crude rubber in London have been increased to 25,413 tons. Arrivals in this country during the first two weeks of February are estimated at 34,100 tons.

The Rubber Association has given consumption for January as 43,002 tons as compared with 34,403 for January, 1928. Imports were 52,305 tons as compared with 46,200 in January last year while stocks on hand show a marked decrease, being 76,342 tons as compared with 110,244 tons last year. Stocks afloat are placed at 78,596 tons as compared with 41,256 tons last year. Revised Department of Commerce figures for net imports during 1928 are placed at 407,573 tons. The company estimates world stocks at the end of January as 225,000 tons.

Toledo Employment Grows

TOLEDO, Feb. 18—Toledo employment has been increasing rapidly with 51 plants—most of them in automotive production—reporting 48,111 workers as compared with 30,994 at the same time a year ago. Several plants are adding night forces and others have greatly expanded output.

Forging Sales High

DETROIT, Feb. 19—Detroit Forging Co. sales in 1928 showed an increase over 1927 of 97 per cent. Sales for the first six months of 1928 were 64 per cent above the same period of 1927, and in the last six months were up 147 per cent from the last half of 1927. The increase for the last quarter was 216 per cent and for December 162 per cent.

Dates Are Arranged for Foreign Shows

LONDON, Feb. 16-The 1929 dates for passenger car, truck and motorcycle shows in London have been settled definitely. Each exhibition will be held at Olympia, as follows: Passenger cars, Oct. 17-26; trucks, Nov. 7-16, and motorcycles, Nov. 30-Dec. 7.

In addition to the International Aircraft Exhibition, which the Society of British Aircraft Constructors will hold July 16-27, for the first time since 1920, a shipping, engineering and machinery exhibition will be held also at Olympia, Sept. 12-18, with sections devoted to motor boats, internal combustion engines for marine and stationary purposes, small craft and accessories.

The Permanent International Bureau, which has headquarters in Paris and is charged with indicating exhibitions of sufficient importance to justify support by the manufacturers of its constituent member-countries, announces the following shows for this year:

Austria-Vienna Samples Fair, March

Belgium-Brussels Auto Salon. Opening Dec. 7.

Czecho-Slovakia-Prague Auto Salon, Oct. 23-30.

Denmark-Copenhagen Auto Show, Feb. 22-March 3.

France-Paris Auto Salon. Opening Oct 3.

Paris Auto Salon (cycles). Opening Oct. 24.

Paris Auto Salon (trucks). Open-

ing Nov. 21. Lyons Fair, March 4-18.

Marseilles Auto Exhibition, March 17-28.

Nantes Commercial Fair, April 4-15

Lille Commercial Fair, April 6-21. Germany-Berlin Auto Salon. Opening Nov. 14.

Hungary-Budapest Auto Salon. Opening May

Jugo-Slavia-Ljubljana Samples Fair, May 30-June 9. Zagreb Auto Exhibition, April

20-28.

New Taxicab Announced

WASHINGTON, Feb. 19 - A new taxicab manufactured by Morris Commercial Cars, Ltd., has been approved by London police authorities and will make its appearance on London streets | try of the Cierva autogiro plane.

Town Roof Markings Rapidly Increasing

NEW YORK, Feb. 19-More than 4000 communities where aerial identification is particularly desirable have either completed roof markings or have such work under way, according to Harry F. Guggenheim, president of the Daniel Guggenheim Fund for the Promotion of Aeronautics. About 3000 additional towns have been requested to effect such workings.

in the near future, the Department of Commerce has learned. It is expected that 1500 of the vehicles will be on the streets before the end of the present year, says the report, as producttion is scheduled at the rate of 150 units per

Nine Ohio Counties Show Lower Sales for January

COLUMBUS, Feb. 18 - The Ohio Council, National Automobile Dealers' Association, in a bulletin sent out covering sales of passenger cars in nine of the most populous counties in Ohio during January shows a total of 8685 cars sold compared with 9220 in December.

Fords lead the list with 2743 sales; Chevrolet was second with 1782; Essex, third, 717; Whippet, fourth, 644, and Oldsmobile, fifth, 236.

Air Reduction Reports Net

NEW YORK, Feb. 16-Air Reduction Co. reports net profits for 1928, before taxes, as \$3,708,738. This is equivalent to \$5.23 a share on outstanding stock and compares with net profits, after taxes, for the preceding year of \$3,208,993. Gross income for 1928 amounted to \$15,652,009.

To Make Autogiro in U.S.

NEW YORK, Feb. 19 — Pitcairn Cierva Autogiro Co. of America has been organized by Harold F. Pitcairn, president of Pitcairn Aviation, Inc., for the manufacture and sale in this coun-

Omaha Junking Plan **Proves Profitable**

OMAHA, Feb. 18-The Omaha Trade Association, a branch of the Omaha Automobile Association, has announced that the first complete year of operating its own salvage yard has resulted in profits far beyond expectation and that within a month it expects to open an office downtown where second-hand parts may be purchased for nearly every car on the market.

When the salvage yard was started by the dealer organization in March. 1927, for the purpose of clearing the city's streets of obsolete cars and in an effort to check repeated trading of such vehicles on new purchases, the members expected merely to meet expenses. However, the venture was so successful that on Feb. 1 all paid up stock was placed on a 7 per cent basis.

During 1928 some 500 cars were scrapped. Prices paid for these ranged from \$1 to \$130, with the average about \$15. A branch yard was established in south Omaha during the year, and each succeeding month showed a larger volume of business than the corresponding month of 1927. Cash sales at the main yard during the year totaled \$18,040. The organization had capital stock outstanding in amount of \$8,955.25 as of Dec. 31, 1928. The largest item of assets consisted of used parts in amount of \$12,500, which figure was said to represent about one-third of anticipated revenue from the sale of this material. A. B. Waugh, who founded the main yard two years ago, is in active charge of the business.

Leaves Ford for Willys

TOLEDO, Feb. 19-Beck Motor Sales Co. has announced that it is no longer a member of the Ford family but has become a local dealer for Willys-Overland. Walter B. Beck, president of the company, organized his business 12 years ago and has sold more than 4500 automobiles in Toledo.

Adams Air Express Formed

NEW YORK, Feb. 18-Adams Air Express has been incorporated with a capital of \$2,000,000 to give a general air express service throughout the country. The company was organized by Dr. Lytle S. Adams, inventor of the air mail pick-up device.

Calendar Coming Events

SHOWS

CONVENTIONS

Annual Meeting National Foreign
Trade Council, Baltimore...April 17-19
American Society of Mechanical Engineers, DetroitMay 1-3
American Management Association,
New YorkMay 7-9
National Highway Traffic Association,
Hotel Stevens, Chicago....May 13-15

RACES

Daytona,	Fla.			Mar. 1-1	15
Akron	Tronk	W (A	ireraft)	St. Louis,	
				May 28-3	30
Indianap	olis .				30

Detroit	June 9
Altoona, Pa	June 15
Salem, N. H	June 29
French Grand Prix, Le Mans	June 30
Akron	Aug. 18
Syracuse	
Altoona, Pa	Sept. 2
Cleveland	Sept. 15
Salam N H	

S. A. E. Sectional

Detroit, Book-Cadillac (Aeronautics) Feb. 25 Washington, City Club (Aviation) .. "